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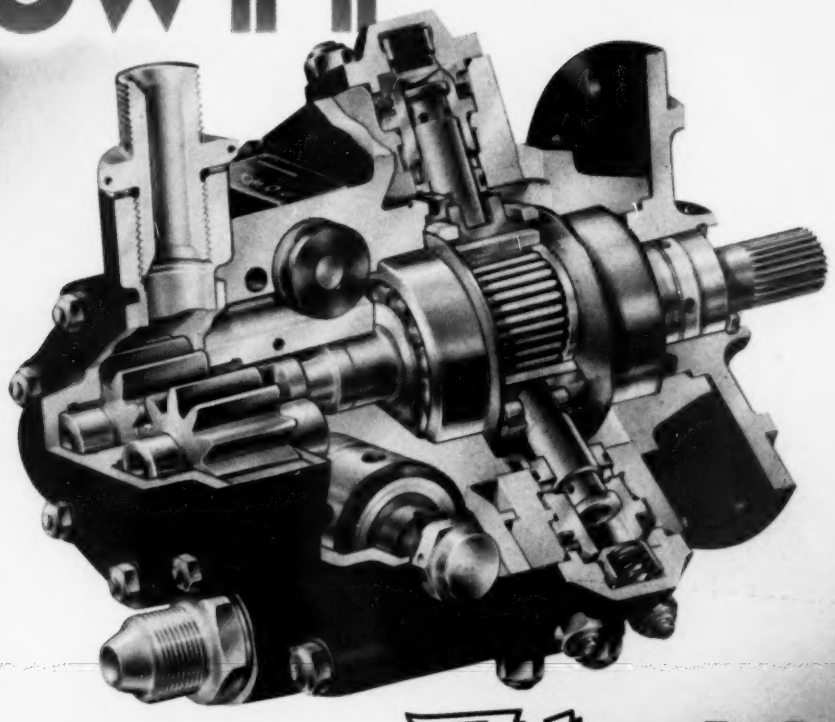

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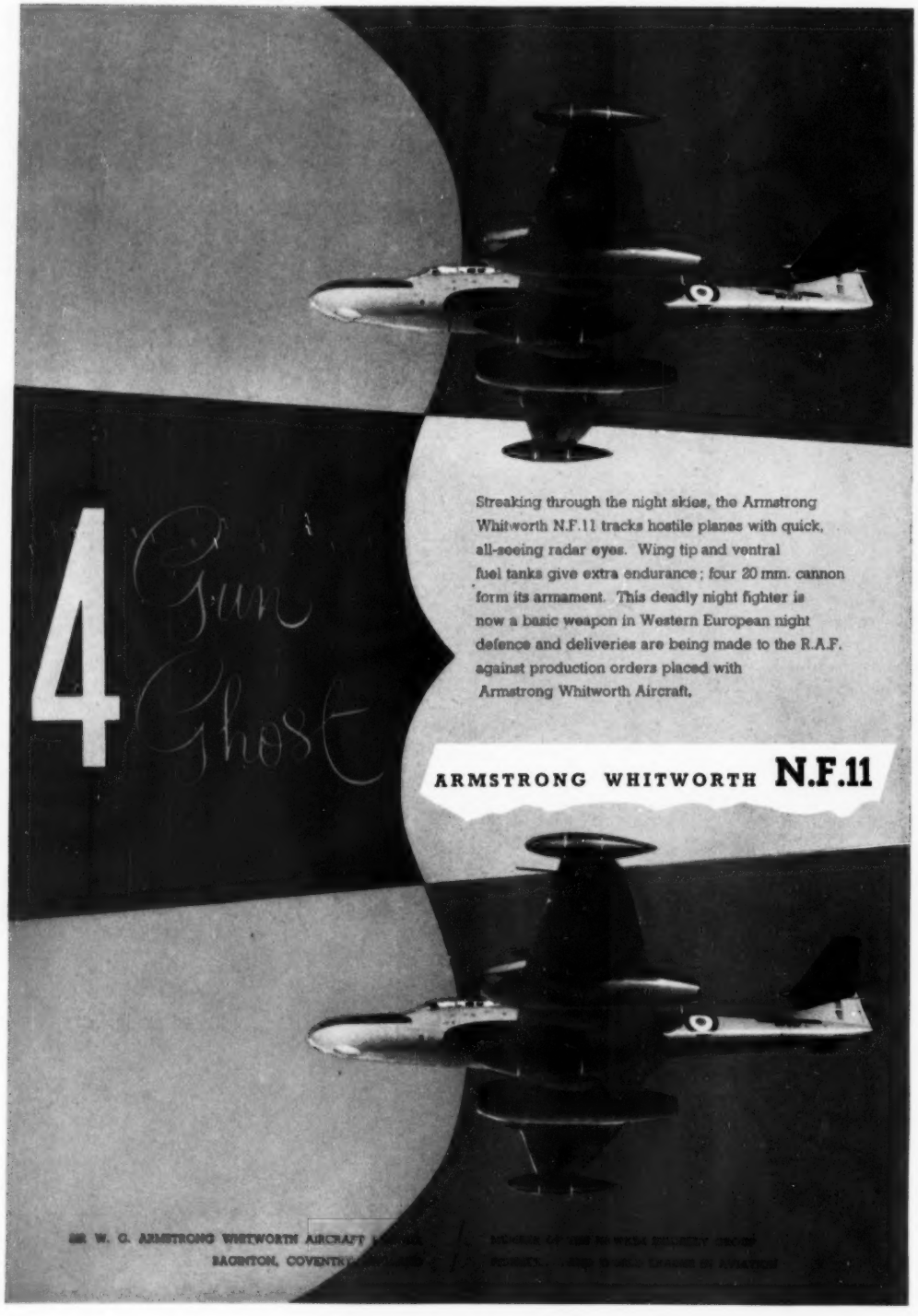
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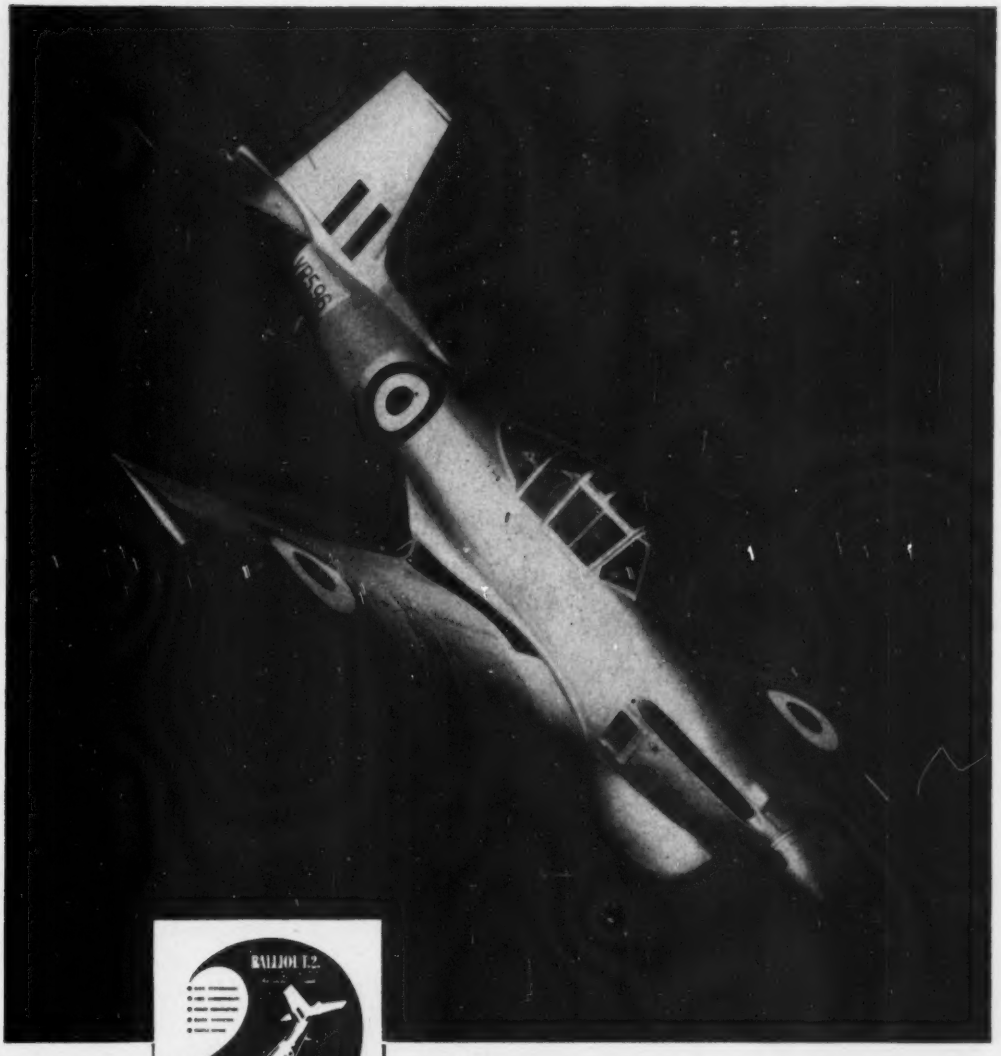

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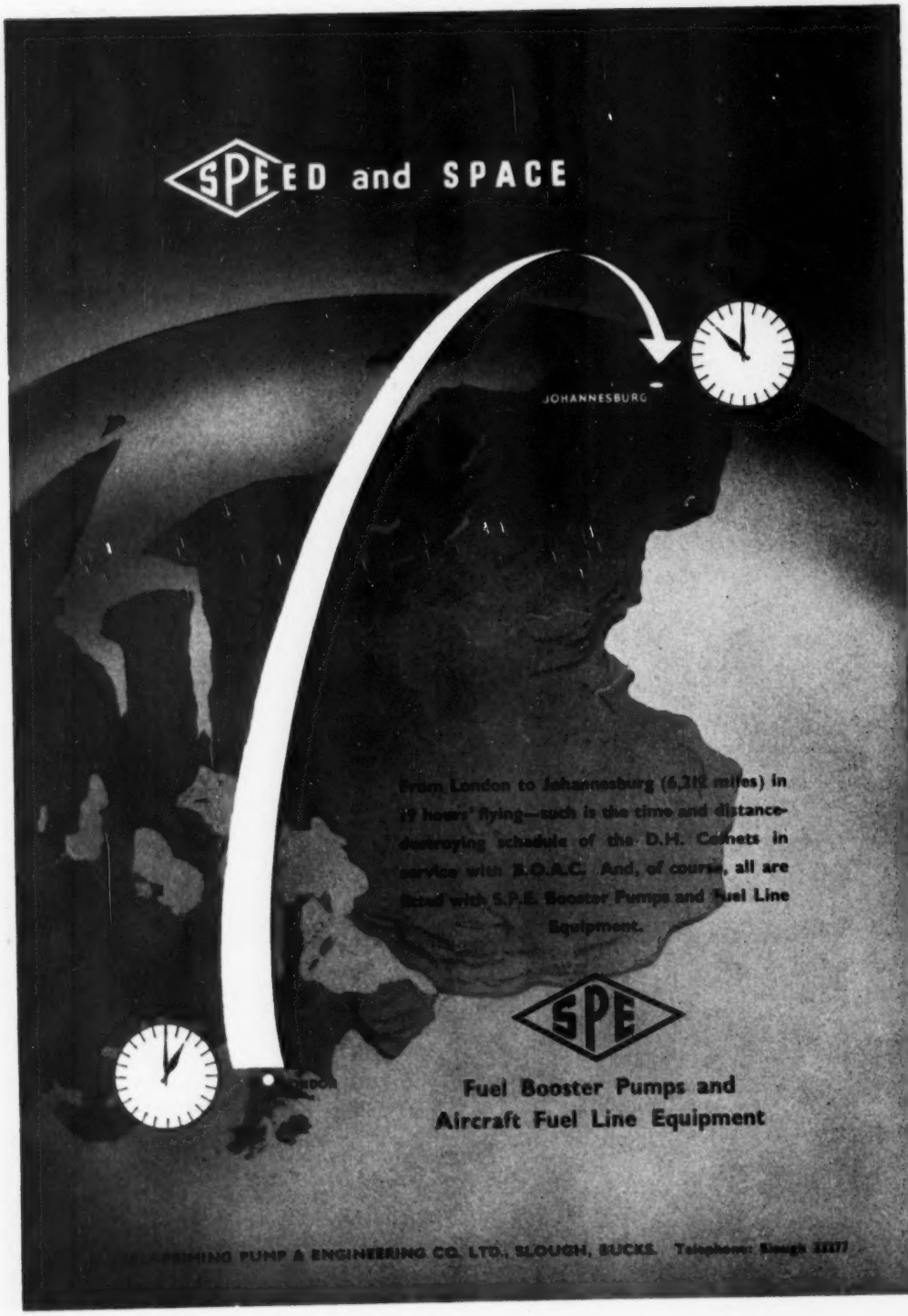
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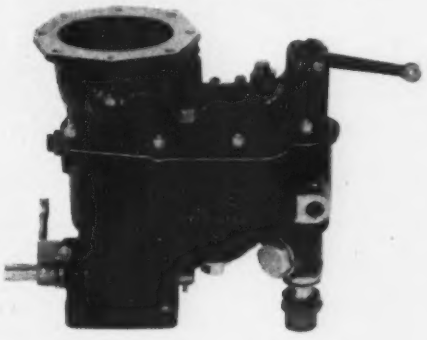

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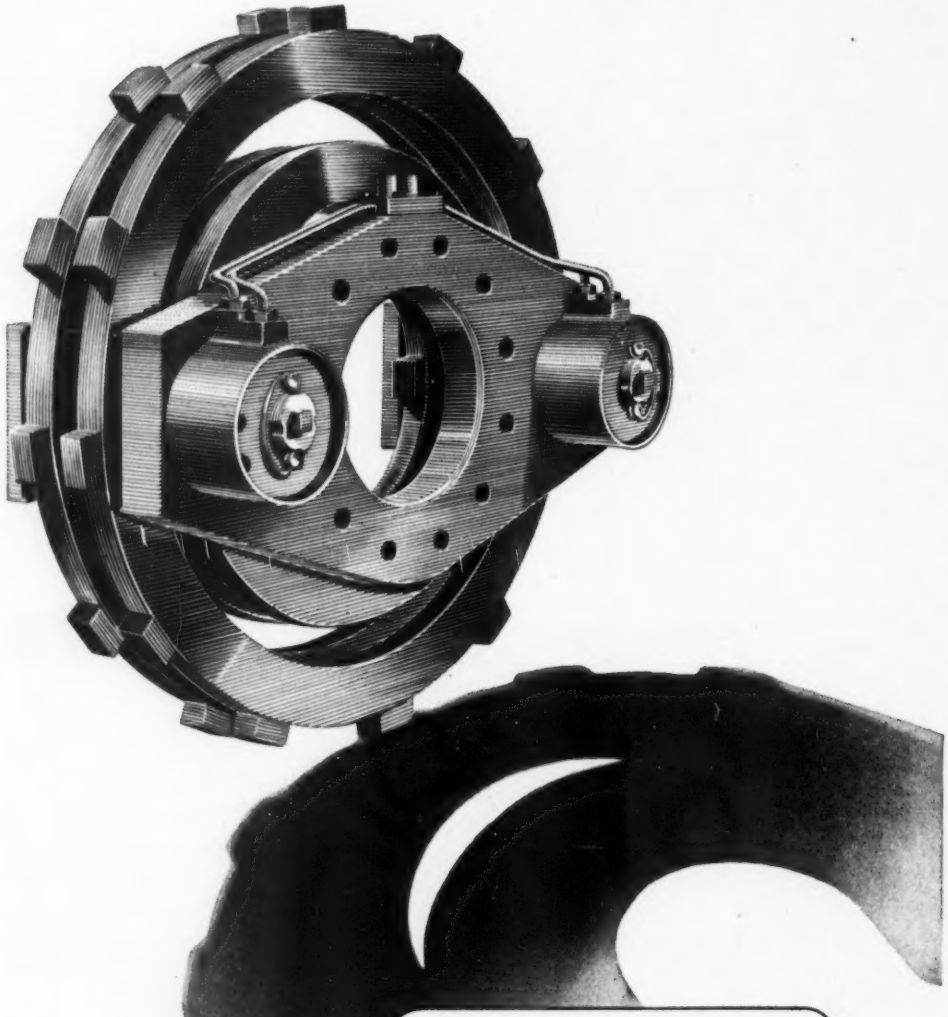

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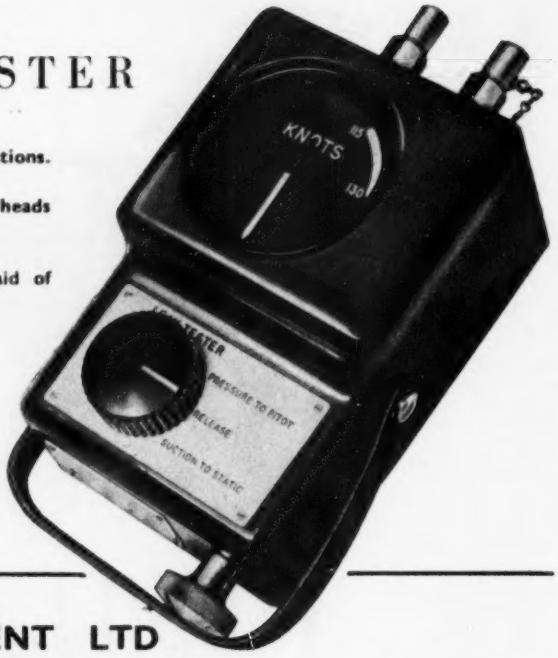

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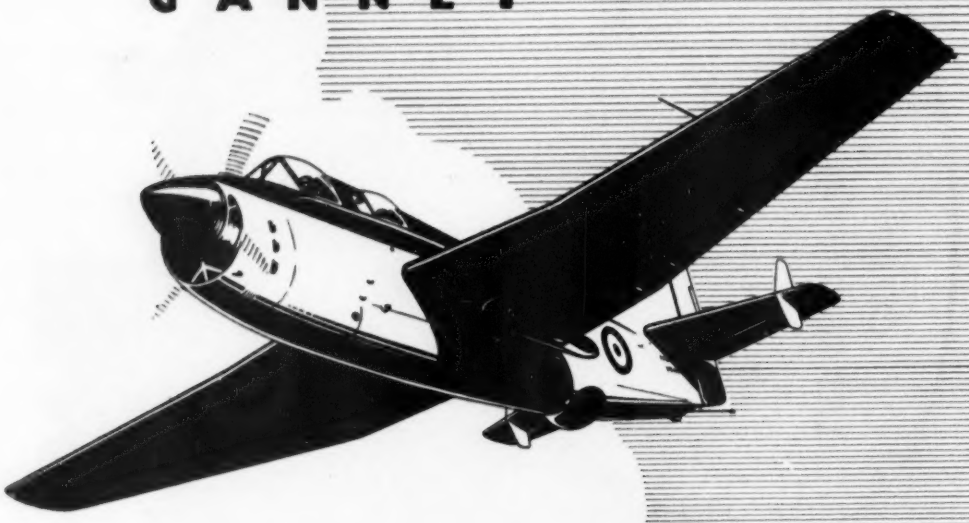

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"Unemployed" Pilots

FLYING techniques, aircraft performance, Service requirements, and even our mode of living are all subject to development and rapid change, but the individual human being merely gets older, and perhaps a little wiser, although collectively he seems on occasions to display even poorer sense and judgment than the monkeys from which he is supposed to have evolved. Once more the world is talking of war, and the Royal Air Force and the Navy are searching anxiously for young men with a high standard of academic knowledge and physical fitness to pilot their jet aircraft—and finding fewer than they would wish.

In the years since the last struggle it has been customary to seek some reassurance in the fact that a short refresher course would make available large numbers of experienced ex-Service pilots if an emergency were to arise, and a good number of these men have, in fact, been keeping their hands in by flying with the Volunteer Reserve. But it is now ten or fifteen years since most of them learned to fly, and, for example, the average age of V.R. pilots must be quite 30 years. Moreover, the men who looked after their training—the flight commanders and C.F.I.s of the war-time schools—are now in their forties, or even fifties.

All of these still serving in the Reserves (together with some National Service pilots and a small intake of A.T.C. cadets) soldier on in their Chipmunks year after year, doing perhaps only one really worthwhile hour out of five spent in the air on flying exercises.

What is the answer? We believe in the first place that a comprehensive survey of the country's "unemployed", or non-professional, pilot-strength would be justified at this time. Then, all who so wished could, according to their age and experience, be classified and given a definite aim in the form of a state of readiness and training. Because a large number of the best pilots are over operational age, we would propose the formation of a Home Air Guard to be available to carry out the sort of emergency duties outlined in the Air League memorandum published this time last year (*Flight* of June 15th, 1951). These pilots, using their own or club light aircraft, would prove invaluable for communications and rescue—the first essentials—following area disruption and destruction of the kind to be expected after an atom-bomb raid; and they could perform a variety of other useful duties too.

For the younger pilots two additional classes might suffice: one for fully trained men to be regarded as potentially operational, and another for all requiring further training and experience. The first of these two classes would obviously have several sub-divisions, not the least important of which would be that of flying instructor. It is our opinion that numbers of suitable V.R. pilots, around the age of thirty, should now be taking instructors' courses as part of their annual flying practice.

For the many trained pilots in the Reserve something more than haphazard refresher flying is required. A definite and constructive syllabus is needed in order to give a training objective for the year or the full period of service. The absence of purpose has already resulted in a noticeable lack of enthusiasm for flying training among some Reservists, and in time this is bound to have undesirable repercussions. It is both extravagant and risky to order a man into the air simply to get in hours, and an experienced pilot cannot practice elementary manuœvres in a Chipmunk time after time and for periods of sixty or ninety minutes at a stretch. Admittedly, practices leading to an instrument rating are valuable, but instrument flying performed merely to complete a quota of hours can rapidly become of little worth.

Finally, we would put in a plea for the acceptance of regular *ab initio* entries to each V.R. school, candidates—say, ten per month for a start—being selected from young men with high educational standards. A double purpose would be served in this way, for not only would a new source of the right kind of young pilot be opened up, but the present V.R. instructors—some of whom have never had the opportunity really to teach flying—would have an occasional break from the endless dual instrument-flying which the present unbalanced and unimaginative syllabus demands of them.

PARTY PIECES

Small Civil Types, New and Not so New, Entertain at the R.Ae.S. Garden Party

FOR its Garden Party this year—held, as usual, at White Waltham—the Royal Aeronautical Society made no special effort to achieve an historical atmosphere: there were no balloon ascents or really ancient aircraft. Instead, the demonstrations were given by a mixture of post-war and immediately pre-war types, plus one or two that in a few more years will qualify as museum-pieces. As in the past, the accent was on the smaller civil aircraft, so that no loud and threatening military noises should shatter the garden-party atmosphere or drown the dulcet strains of the Fairey Aviation Works Band.

Even the weather, this time, made some attempt at graciousness, heavy cloud at 5,000ft giving way to 6-8/10ths cover, with lengthening spells of sunshine, as the afternoon wore on. A 5-10 kt wind blew from the north, a quarter unhelpful to those pilots who had to give slow-flying demonstrations, for to fly upwind meant approaching the enclosures head-on instead of, ideally, flying along in front of them.

The R.Ae.S. president, Mr. George Dowty, announced during the afternoon that Her Majesty the Queen had consented to become patron of the Society.

The Prestwick Pioneer G-AKBF (Alvis Leonides) opened the flying by taking, so to speak, a running jump from a standing start. A horse-show hurdle, complete with greenery, stood about 100 yards ahead—but across wind—of where the long-legged steed stood; in the saddle, W.C. N. J. Capper, Scottish Aviation's chief test pilot, dug in the spurs; and his mount cleared the jump comfortably and went on and up at the same startling take-off angle. Thereafter the demonstration was the familiar yet somehow always surprising one associated with this aircraft, ranging from the fairly fast to the fantastically slow.

The exposition of the Auster Aiglet Trainer (D.H. Gipsy Major 1), which followed, was, from every point of view, a model of demonstration aerobatics, especially for such a light aircraft. In five minutes R. L. Porteous put G-AMMS through almost every trick in the book, old and new, and to even the old ones he managed to give a new twist; it was done with the precision and timing of a trapeze artist, and positioning in relation to the audience—so often a pitfall for otherwise good demonstrators—never once erred.

C. T. D. Hosegood made the first of the helicopter demonstrations. On familiar lines, it showed the ability of the Bristol Sycamore (Alvis Leonides) to go fast, slow, vertically up, vertically down, backwards and—what still never fails to impress—bodily sideways the full length of the enclosure.

After that it was back to slottage and flappery again, this time demonstrated by John (pen and parachute) Fricker with the improbable looking little Zaunkoenig ultra-light, built by technical students in Germany in 1942, and engined with a 51 h.p. four-cylinder Zündapp.

A pilotless aircraft next performed—a 10ft 9in radio-controlled glider built by the Low Speed Aerodynamics Research Association, an independent voluntary body of enthusiasts who, inspired by the Consolidated "aerodynamically similar" research model programme, are working on similar lines in this country. Monitored by D. W. Allen while N. L. Walker gave a microphone commentary, the glider did more or less what it was told, though its duration seemed a little disappointing.

The oldest aircraft present—G-EBMB, the pretty little Hawker Cygnet ultra-light biplane built for the Light Aeroplane Competitions of 1924—next took the air, in the hands of Hawker test pilot Frank Murphy. Its span is 24ft, weight empty 442 lb, and a.u.w. 900 lb. Now with a 36 h.p. Bristol Cherub—it has had a variety of engines in its lifetime—it buzzed happily back and forth at 75 m.p.h. or so.

A somewhat younger pre-war ultra light demonstrated was the Aeronca (36 h.p. J.A.P.), G-AEVS, flown by B. J. Snook. He was on home ground here, for the Vintage Aeroplane Club, of which he is a member, has its H.Q. at White Waltham.

Veteran glider pilot and instructor John Furlong, with an A.T.C. cadet (F/Sgt. Edgson, No. 155 Maidenhead Sqn.) playing the part of pupil, gave a most informative ground-to-air dissertation *via* one of the new Pye lightweight V.H.F. installations in the side-by-side cockpit of a Sedbergh Trainer. These sets, incidentally, are being used by the British team in the forthcoming international contests in Spain, and Ann Douglas, the team's captain, showed us the neat transmitter and receiver stowed in the luggage-boot of one of the Standard Vanguards which will transport the party. Air-to-ground range is about 50 miles.

Bearing the three-crown insignia of the Royal Swedish Air Force, the graceful yet sturdy-looking Gipsy-Major-powered Saab Safir was effectively demonstrated by Capt. Bissmarck, Assistant Air Attaché at the Swedish Embassy.

Everything owned by B.E.A. has a knightly or otherwise impressive name; even so, *Sir Balan* struck an odd note on the side of a Bell 47B-3 helicopter, G-AKFB (180 h.p. Franklin), displayed by Capt. J. G. Theilmann of the Corporation's helicopter unit. He finished with an impressive high-speed run, nose well down, along the front of the enclosure.

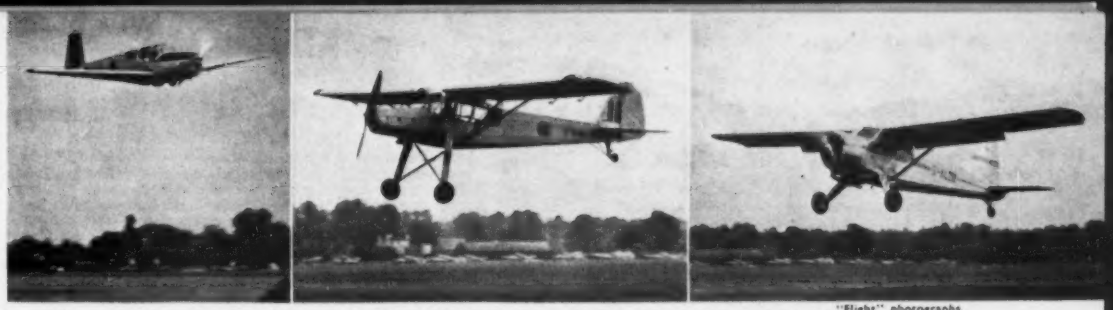
Geoffrey Alington—who had earlier put the Tipsy B, G-AISC, through its paces—demonstrated that speedy little Comper Swift (Pobjoy R) G-ABUS with which Throttle Bender Tony Cole has so often confounded handicappers; with no aerobatic C. of A., *Black Magic* had necessarily to be confined largely to high-speed, low-down fly-pasts.

There followed a contribution which, though of completely contrasting nature, rivalled that of Porteous for entertainment-

"Flight" photographs

(Above) The well-remembered Gloster Gladiator was, perhaps, the aircraft which aroused the most admiration.

(Left) A section of the crowd: Mr. Peter Masefield (and family) and Capt. A. G. Lamplugh may be recognized.



"Flight" photographs

A three-nation trio demonstrated: (left to right) The Swedish Saab Safir, German Fieseler Storch and the Canadian de Havilland Beaver.

value. Fairey test pilot M. R. V. Morris took up the little Fairey Junior (Walter Mikron) in a loop straight off the deck; then, having completed the loop and thus brought himself back to spectator-level, he proceeded to give the remainder of his demonstration at that altitude (if altitude be the word), one or other of OO-ULA's distinctive low-aspect-ratio wings alternately fanning the grass in near-vertical turns.

Two de Havilland products, Canadian and British, were demonstrated in company—a Beaver, G-ALOW (Wasp Junior) and a Chipmunk, G-ALWB (Gipsy Major 10), were flown by D. B. Taylor and Pat Fillingham. Taking off together, they then separated and made their passes in opposite directions. All those who had read of the exploits of Beavers in various backs-of-beyond, but had never seen the aircraft in the flesh, were soon able to gain some idea of why it is such a dependable maid-of-all-work.

Next the stilty Fieseler Storch (Argus inverted vee-eight) with its greenhouse-like cockpit enclosure (adorned inside with earnest texts, in large red letters, e.g., "HAVE YOU TURNED THE PETROL OFF?") took off with a Meise glider (the original German Olympia) on tow. The Storch, owned by the R.A.E., was flown by S/L. J. L. Sowrey, a Farnborough pilot, and in the cockpit of the Meise was Lt-Cdr. G. A. J. Goodhart, who will be a reserve pilot in the British team in Spain. Having been cast off at about 3,000ft, Goodhart descended in a series of loops and stall turns, finishing with a beat-up in which he reached 120 kt along the front of the enclosure. Sowrey then proceeded to stall the Storch (which can fly at 30 m.p.h.), purposely stopping his engine; but when he dived to re-start it nothing happened—there was it seems, on this particular occasion, a sudden lack of ignition, so what looked like a demonstration dead-stick landing was in fact a forced one.

The remaining helicopter demonstration was by D. Colvni of Westlands with the S.51, G-ALIK, which had been kept busy during the various tea intervals in giving joy-rides. We have never seen any helicopter keep quite so literally still in mid-air. A "rescuer"—we believe it was Lt-Cdr. J. S. Sproule—was lowered by winch to the ground.

The final demonstration—unadvertised—was by an aircraft which brought acute attacks of nostalgia to many present—the Gloster Gladiator G-AMRK, one of the two existing aircraft of this type which Flightways, Ltd., of Eastleigh, have "cannibalised." Like Mistinguett, this shapely lady has kept time at bay: and her slim legs (the comparison remains apt) are as graceful as in the days when Mr. Dowty's internally sprung wheels gave the Gauntlet the cleanest undercarriage ever. Flown by V. H. Bellamy, the biplane swept round at well over 200 m.p.h., the distinctive note of the Bristol Mercury as evocative of pre-war (and early war) Service days as the compact silhouette of the aircraft itself.

Among aircraft shown statically were one of the Slingsby Sky sailplanes which will represent Britain in the international contests; the Avro XIX "radio classroom" owned by the College of Aeronautics; two Dart Kittens; and Tom Hayhow's Aiglet—complete with Decca Navigator, lots of radio, and roller-map case fixed on top of the joystick.

In conclusion, three bouquets must be awarded—to G/C. R. G. Slade, who was in control of the smoothly run flying; to B. J. Hurren, for a well-balanced commentary; and to whoever compiled the unusually informative printed programme.

OTHER WEEK-END EVENTS

Rearsby Defies the Rain

AN unusually full and varied programme of events planned for the Auster Flying Club's air display at Rearsby on Saturday was much marred by extremely bad weather—continuous drizzle and an average cloud-base of 300ft. Even so, twenty of the items were carried through on schedule and some 5,000 enthusiasts were there to see them. Everyone was agreed that the oustanding event of the afternoon was the display by F/O. A. J. A. Ellwood, flying a Meteor 4 from No. 203 A.F.S., Driffield. In fact, he made two appearances during the programme, landing at Wymeswold in between. In the quite appalling weather F/O. Ellwood, who is son of Air Marshal Sir Aubrey Ellwood, made extremely precise and slow rolls which several very experienced pilots present declared the best they had seen in any weather.

The rest of the programme included a demonstration of a Drone by Mr. Waterhouse, this machine being the only one with Bristol Cherub power; some very good aerobatics in a Chipmunk by F/L. Hester, C.F.I. of No 5 Basic F.T.S., Desford; and an excellent show by Bill Bedford in the Hurricane (he pressed on through the pervading clamp to the Rearsby area, returned to Dunsfold, having failed to find the field, but refuelled and set out once more to arrive in time for his demonstration). Neville Duke was also present to aerobat the Tomtit, and F/L. Barry Radley of Farnborough demonstrated the Storch. Hayhow was there with G-AMOS, and Auster's No. 2 test pilot put the Model S and the Ambulance/Freighter through their paces.

The Auster B.4 Freighter was flown with the tail fairing removed so that precise supply-dropping of bulky packages could be demonstrated. Ranald Porteous somehow found space between cloud and ground to aerobat the Aiglet Trainer, and the Patrouille d'Etampes put on an excellent, if limited, display of formation flying. The programme closed with gliding by a Sedbergh, crop-spraying and dusting by Aiglets, and an interesting combined event by 664 A.O.P. Squadron, R.Aux.A.F. and No. 228 Field Regiment R.A., T.A. in a co-operative radio-controlled shoot.

Air Girls

DESPITE poor weather the Air Ranger Section of the Girl Guides Association managed to stage a successful "flying pageant" at Sywell Aerodrome, on Saturday. H.R.H. The Duchess of Gloucester was present, with her son Prince Richard, and Air Chief Marshal Sir Ralph Cochrane, Vice Chief of the Air Staff, took the salute at the march-past.

A 19-year-old Air Ranger of No. 1 Westminster Flight, Audrey Windle, who has just qualified for her P.P.L., flew a Chipmunk,

At Sywell: Air Chief Marshal Sir Ralph Cochrane, G.B.E., K.C.B., A.F.C., inspecting a contingent of Air Rangers from Liverpool at the Air Ranger Pageant. (See "Air Girls," in column two above).

OTHER WEEK-END EVENTS . . .

and Jean Weller, a 21 year-old member of the same flight, gave a gliding demonstration—she qualified for her "C" Certificate about a month ago. Included among the flying events were an instructor-pupil act in two Chipmunks by Mr. Hamilton and Mr. Hale, instructors of No. 1 R.F.S., Panshanger; formation-flying by three Chipmunks of No. 6 R.F.S., Sywell; and an aerobatic display by F/L. H. A. Hirst, flight commander of No. 206 A.F.S., Oakington, in a Meteor. S/L. Neville Duke delighted the crowds with his demonstration of the Hawker Tomtit of 1928.

A model aircraft competition was won by Barbara Dobbs of No. 1 Westminster Flight, who was awarded a silver cake stand and, in addition, a framed photograph presented by *Flight*.

Panshanger Under a Cloud

BOTH the London Aeroplane Club and the Vintage Aeroplane Club seem to have been particularly unlucky with the weather this season, and the "At Home" which they staged at Panshanger last Saturday, June 14th, suffered a fate similar to that of their preceding events this year. However, despite the low cloud-base and poor visibility quite a number of visitors arrived by 3 p.m. and some 23 aircraft were neatly parked outside the hangars. Among them were the Hillson Praga, G-AEUT, now owned by Mr. V. H. Hallam; Puss Moth G-AAZP, also under new ownership; Hornet Moth G-AEET, which has recently been rebuilt by a member of the London Aeroplane Club and now sports a smart red coat; the Swedish Embassy Saab Safir, a resident of Panshanger; and a very handsome Tiger Moth, G-AMCM, which Mr. H. Skinner flew over from the R.A.E. Aero Club at Farnborough.

The weather necessitated the cancellation of the major part of the programme, although towards the end of the afternoon there was a bombing competition. It was doubtful whether this was in fact a competition or just a chance for one and all to get airborne; but everyone seemed to enjoy it. The time-of-arrival competition was won by Mr. P. J. Colbourne, who, it seems, is doing very well at this type of thing.

Despite the unkind turn of the weather, interest was maintained by a static display and other entertaining sidelights which Mr. D. H. MacBeath and his team of helpers had made possible.

FROM ALL QUARTERS

More R.A.F. Pilots for Korea

THERE will be general satisfaction—not least in the R.A.F. itself—that more pilots of that Service will be posted for duty in Korea under an expansion of the exchange-posting scheme between the R.A.F., Commonwealth Air Forces and the United States Air Force. The officially declared object of this move is "to create a nucleus of R.A.F. fighter pilots with first-hand combat experience against the types of fighter aircraft now being used by the Communist forces in Korea."

The pilots are to be selected from Fighter Command and from the 2nd Tactical Air Force in Germany. An unspecified number of Fighter Command pilots are now concluding a conversion training course on F-86 Sabres in the U.S.A. prior to posting to U.S.A.F. squadrons in Korea. From the 2nd Tactical Air Force another six pilots have been chosen for duty with No. 77 Squadron, Royal Australian Air Force, which, equipped with Gloster Meteor 8s, has been relegated to the ground-attack role. These pilots will shortly be leaving England. Additionally, other pilots from T.A.F. squadrons are to be posted to F-84 Thunderjet units which, like the Meteor squadron, are engaged on ground-attack duties in Korea. These pilots will likewise undergo conversion training in America.

It is planned that the British pilots will complete an operational tour lasting between six and nine months before being replaced by other pilots of the R.A.F.

A Douglas Jet Transport?

REPORTS from America indicate that the Douglas Aircraft Corporation will very soon announce its design for a jet transport, presumably to be designated DC-8. Of the rumoured U.S. jet-airliner projects, the Douglas is possibly nearest to construction, and the beginning of work on the prototype may coincide with the announcement of its existence. At a reported all-up weight of 145,000 lb, the aircraft should have a capacity for 85-90 passengers. Its power-units—to be installed in "pods" and not buried in the wings—are likely to be four axial-flow turbojets of some 10,000 lb thrust per unit; the choice of power-plant probably lies between the Pratt and Whitney J-57 and the Wright-built Sapphire. Wings will be swept back some 35 deg, and a cruising speed of over 500 m.p.h. is specified.

More positive information is expected within the next few days. Meanwhile, it is interesting to recall comments made by Douglas on the question of financing construction of an American jet-transport prototype; the company's president said recently that he wanted no Government assistance, because of the attendant limitations, controls and influences. Our correspondent in America discusses these matters on page 755.

Skyrocket's 79,000ft Plus

LATE last summer the United States Navy officially announced in New York that a Douglas Skyrocket research aircraft had exceeded the world's absolute altitude record of 72,394ft, established by Capts. Orvil Anderson and Albert Stevens in a balloon in 1935. The machine had been launched from a Superfortress flying at 35,000ft, and although it was reported that a speed of about 1,000 m.p.h. was achieved on the climb, no figure for height was divulged.

Last week—on June 10th—the American National Advisory Committee for Aeronautics made a more definite announcement—to the effect that the Skyrocket, piloted by Major "Bill" Bridgeman, had reached a height of "better than 79,000ft." Thus, John Cunningham's official heavier-than-air record of 59,446ft, in a special De Havilland Ghost-Vampire on March 23rd, 1948, has probably been exceeded by at least 20,000ft.

PRINCES . . . : Production of Percival Sea Princes (two Alvis Leonides) is now attaining a very satisfactory rate. Those depicted are part of the batch already delivered to the Navy, who install their own radar and certain other equipment—four noses in the line have been transformed.

President Truman on the U.S.A.F.

SPEAKING recently at Springfield, Missouri, in defence of his air-power programme, President Truman revealed that the U.S. Air Force now has nearly 15,000 aircraft in active use, not counting those of the U.S. Navy and Marines. This summer, he said, America would have a 95-wing air force and present plans called for completing a 143-wing force in two or three years. Aircraft were being turned out more than four times faster than before the Korean war.

Some of the new jet fighters, the President added, cost as much as 600,000 dollars (about £215,000), or nine times the cost of the average fighter used in the last war. A B-36 bomber cost 5 million dollars (about £1,785,000) today, compared with 800,000 dollars (about £286,000) for a B-29 Superfortress seven or eight years ago.

Concerning the build-up of air power in Western Europe, Mr. Truman said that there would be 60 wings in Europe under N.A.T.O. command by the end of this year.

Mr. Finletter Here

ON Friday last, the two squadrons (47th Bomb-wing) of B-45C Tornadoes now based at Sculthorpe, Norfolk, received a visit from Mr. F. K. Finletter, secretary of United States Air Force, who had flown from Paris for the purpose. The last of the B-45s, which had flown from Langley Field, Virginia, during the week, arrived at Sculthorpe on the previous day.

Mr. Finletter was accompanied by General Norstad, commanding Allied Air Forces in Europe.

B.E.A. to Deauville

PIONAIR *Sir George Cayley* was assigned to re-open B.E.A.'s summer service to Deauville on June 13th. For economy the trip was combined with a proving flight and passengers had a longer ride than they expected, while Capt. Arnold-Boakes proved the let-down procedure. Additional to the M.F./D.F. facilities, Deauville boasts a new V.H.F. installation. As the Pionair came in, runway extensions were seen to be in progress, but the 1,050 m available proved ample—1,200 yd being the scheduled minimum for a Pionair at full load. The service is being operated daily in each direction, and the return fare is 12 gns.

French Air Force Reconstruction

THE programme for rebuilding the French Air Force was discussed by M. Pierre Montel, the Secretary of State for Air, in a debate on the defence budget in the French National Assembly last week.

According to a report from *The Times* correspondent, M. Montel said that France was to provide the N.A.T.O. forces during 1952 with 28 fighter squadrons, representing 556 modern aircraft. French resources, however, were more than 50 million francs less than the cost of commitments—about 300 million francs—and the expedient of "off-shore" purchases would apply only to manufacture and not to the "maintenance of effectives or of infra-structure."

The Minister went on to state that French factories could now undertake twice the volume of their present production; the major problem was, therefore, that of placing orders or, in other words, of obtaining the necessary credits. The Ouragan, averred M. Montel, was a first-class intercepter, and, "with its two 20 mm cannon and its supplementary rockets," would support ground operations. The Mystère 452 and Mystère IV he described as being the subject of "the highest praise."

Hermes Troop Carriers

AIRWORK'S Hermes troopers were due to go into service this week, the first aircraft being scheduled to take off from Blackbushe at 9 p.m. last Tuesday, June 17th. The interior arrangements of the Hermes are still comparatively luxurious compared with some other troop carriers, but 68 standard rearward-facing seats are now provided. The company's contract is for reinforcement of the Canal Zone, and two Hermes are ready for service; the conversion of a third is due to be completed tomorrow and a fourth in approximately a month's time.

Russian Strength in Austria

IT is "conservatively estimated" in Vienna that the Russian military air strength in Austria is 240 machines. Of these, 125 are said to be Mig-15 jet fighters (representing an increase of 30 per cent during the past few months) and more than a hundred Pe-2 attack bombers—piston-engined aircraft of war-time design. The only military aircraft operated by the Western Powers in occupied zones of Austria are communication types.

Charter Accident

AN Airspeed Consul of Morton Air Services descended into the English Channel on Saturday, apparently (according to survivors' stories) after partial failure of one or both engines. The aircraft had been chartered to fly seven passengers from Croydon to Le Mans. Five of the passengers were rescued by the U.S. ship *American Miller*, but three died soon afterwards; the bodies of the pilot (Capt. Page) and two remaining passengers had not been recovered at the time of our going to press.

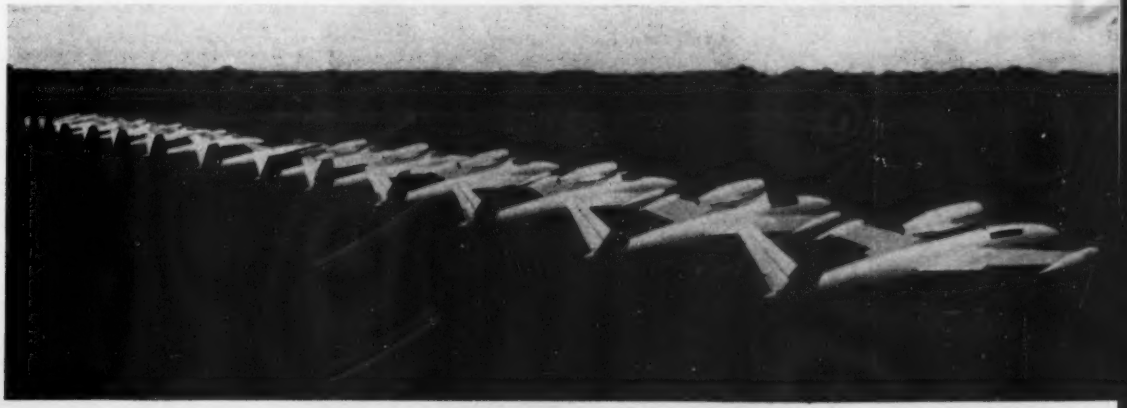
Newcastle's Supporting Programme

DETAILS of the air display which is to be held in conjunction with the National Air Races at Newcastle-upon-Tyne Airport on July 11th and 12th have been announced by the Royal Aero Club. Three international races—the Grosvenor Challenge Cup, the Norton Griffiths Challenge Trophy and the Kemsley Challenge Trophy—will be flown on Friday, July 11th, at about 6 p.m., and certain of the special demonstrations arranged for the following day will also be given a dress rehearsal, included amongst them Prince Cantacuzene's Jungmeister aerobatics, and Charles ("Chuck") Thompson's aerial gymnastic event

On the Saturday the programme will begin at 2.30 p.m. with the King's Cup Air Race—an all-British handicap event for which the 24 competitors will be drawn from the three races of the previous day. The afternoon's programme will continue with a formation fly-past and individual aerobatics by F-86s from the fighter wing of the R.C.A.F. at North Luffenham, a demonstration of an R.A.F. Canberra, and another by Naval Attackers. No. 607 County of Durham Squadron, R.Aux.A.F. (Vampires) will also appear.

The trophies are to be presented by Field Marshal Viscount Montgomery of Alamein.

—AND YOUNG PRETENDERS : Fouga light aircraft, all powered with a single Turboméca jet unit, on the maker's airfield at Aire-sur-l'Adour, Landes, France. These beautiful little machines hold high promise as trainers and sporting mounts; the first—a Cyclone—flew on July 14, 1949.



HERE AND THERE

SNAKE PIT: With a Mamba in the nose, an Adder with an experimental afterburner in the tail, and four Merlins on the wings, this Avro Lancaster test-bed is certainly earning its keep with Armstrong Siddeley's Engine Development Flight at Bitteswell. The framework up-front is an anti-icing test rig and, apparently, a special ultra-coarse-pitch cropped airscrew absorbs the power.

New Thunderjets for France

REPUBLIC Thunderjets of the F-84G version (equipped for flight refuelling) are being delivered to the French Air Force at Rheims. The Third Fighter Group, which is stationed at this base, has previously been operating F-84Es.

Quick Midjet

DURING its initial flight tests, with the Turboméca Palas turbojet delivering only rated cruising power, the Fouga Midjet has reached a speed of 206 m.p.h. At full power (345 lb thrust) the maximum speed is expected to reach 250 m.p.h.

Spokesman

"NOW that parrots can be imported they have become popular souvenirs for B.O.A.C. aircrews to bring back from Africa. There is a story going round that Sir Miles Thomas, head of B.O.A.C., asked a pilot to bring back one for him. The pilot was only too happy. But they say that the crew, by concentrated work on the flight from Africa, taught the parrot to say 'More pay for aircrew.' "—Tanfield, in the *Daily Mail*.

Sydenham's Runway

DURING a visit to Belfast last week—when he was shown over the flight establishment of Short Brothers and Harland at Sydenham Airport, Belfast—Mr. J. P. L. Thomas, First Lord of the Admiralty, said that work was being put in hand for the extension of the main runway at Sydenham to make it suitable for jet aircraft. It will be remembered that Shorts have a contract for building Canberras and Comets.

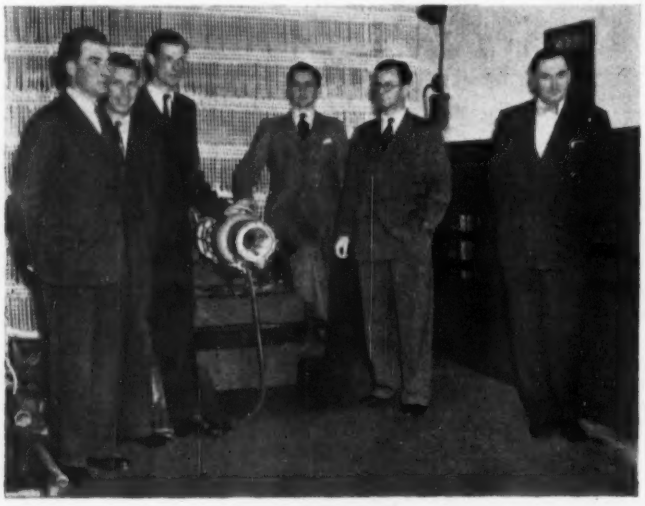
Formation Salute

A FORMATION of some fifty B-50s of the 509th Bombardment Group, 7th Air Division, came down to 1,500ft over Ruislip Middlesex, last week—by special permission—in order to salute the U.S.A.F. headquarters. From their bases at Mildenhall, Lakenheath and Upper Heyford, they were engaged on formation flying practice.

Parliamentary Comet

A PARTY of 32 Members of both Houses of Parliament flew 800 miles round England in a B.O.A.C. Comet last week. They were almost equally "paired" from the Conservative and Labour parties (but they did *not* sit to left and right of the cabin!). Among them were Mr. A. T. Lennox-Boyd, Minister of Transport and Civil Aviation; Mr. R. Maudling, Parliamentary Secretary to the M.C.A.; Lord Lucan, former Parliamentary Under-Secretary for Commonwealth Relations; Lord Crook; Lord Gifford; Lord Latham; Mr. Gordon Walker, former Secretary of State for Commonwealth Relations; and Mr. G. Lindgren and Mr. Frank Beswick, two former M.C.A. Parliamentary Secretaries. Their host on board was Sir Miles Thomas, chairman of B.O.A.C., and the pilot was Capt. J. Linton.

MEN BEHIND THE SNARLER: On the occasion of a demonstration of the Armstrong Siddeley Snarler rocket motor at the company's Anstey test establishment are seen Mr. Sid Allen, chief combustion engineer; Mr. Wally Chapman, rocket-shop superintendent; Mr. Dennis Hurden, technician in charge of rocket motors; Mr. David Andrews, chief designer, rocket motors; Mr. W. H. Lindsey, M.A., chief engineer; and Mr. M. N. Golovine, M.B.E., sales director, aero engines.



Hot Ship

THE two-man crew of a DC-4 which landed at Brownsville, Texas, last week were arrested soon after their arrival on a charge of stealing the aircraft from United States Overseas Airlines. The men claimed that the company owed them over £50,000 and that they took the DC-4, valued at some £250,000, as security. Although the machine took off from Oakland, Calif., three hours before it was due to leave for Tokyo on the Pacific airlift, no alarm was sounded for two hours.

Incentive

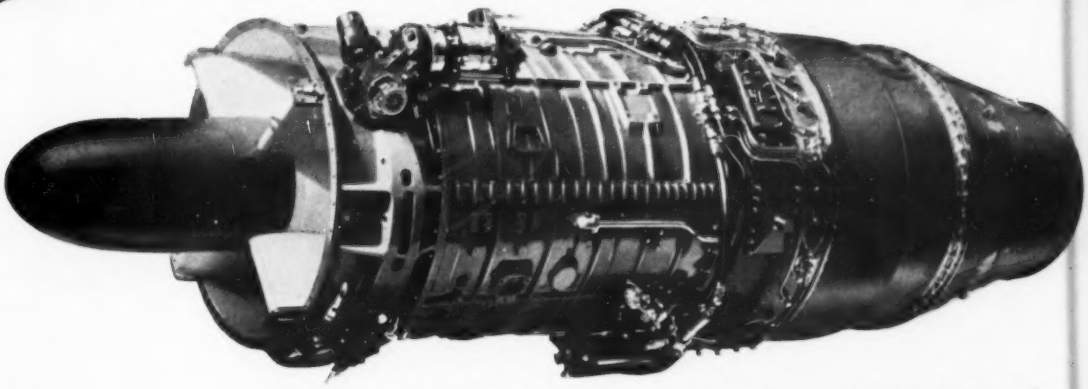
DURING its recent sales tour of the Low Countries and Scandinavia, the Bristol 171 Sycamore gave demonstrations to civil, military and naval authorities at Ypenburg, The Hague. Here the passengers included Dr. Albert Plesman, K.L.M. chairman; within one hour of his flight Dr. Plesman had called a company meeting to discuss K.L.M.'s future helicopter policy. Summing up on the tour, Bristol's aircraft sales manager, Mr. Farnes, said: "At all points, the intense interest surprised us . . . there is a very good chance of substantial business . . ."

Farnborough Dates

IF the number of enquiries we are already receiving is any criterion, public attendance at the S.B.A.C. Show at Farnborough promises to break all previous records. Intending visitors should note that the public days are Friday, Saturday and Sunday, September 5th, 6th and 7th. It is understood that the Friday will be a special "top-price" day, on which at least 10s will be charged, whilst admission arrangements on the "trade" days will be considerably tightened up. There is also a promise of better traffic-handling. Further details will be announced as they become available. Booking arrangements are again in the hands of Auto-Parks, Ltd., 1, Maclise Road, London, W.14 (Shepherds Bush 5385).

TWO NAMES ONE ENGINE

IN THE UNITED KINGDOM . . . . . **THE SAPPHIRE**



IN THE UNITED STATES OF AMERICA **THE WRIGHT J/65**

A major contribution to Western Defence is the Armstrong Siddeley Sapphire high-thrust turbojet, now the most powerful type tested engine in the world—8,300 lb. thrust. In the United States of America, where the Sapphire is being manufactured under licence by the Wright Aeronautical Corporation it will be known as the Wright J.65

ARMSTRONG SIDDELEY MOTORS LTD

Armstrong Siddeley Motors Ltd., Parkside, Coventry

MEMBERS OF THE HAWKER SIDDELEY GROUP

Installation for research into use of bearings at high rotational speeds.

Working for Britain's Future

Napier engineering is of the kind wherein no detail is too small to require thorough proving before it takes its place in the final assembly. Even ball and roller bearings, often regarded as a standard product of known characteristics, take their turn in the rigorous proving process, running in multiple rigs under planned loadings. Perfection of detail is a principle which in its observance has made the name of Britain a synonym for fine engineering and the work of Napier a proud page in Britain's story of achievement.

NAPIER

NSP.2

D. NAPIER AND SON LIMITED · LONDON · W.3

SCENES FROM SCHIPHOL, where K.L.M are now using their newly opened "Kingsford Smith Hangar" (left); in the foreground are a Constellation L-749A and the "Schiphol Express," driven by a disguised jeep, which takes spectators on airfield tours. Likewise jeep-powered is K.L.M.'s ingenious self-propelled mechanical loader, seen in the right-hand view; the aircraft is a Convair CV-240.

HERE AND THERE . . .

Tribute to a Pioneer

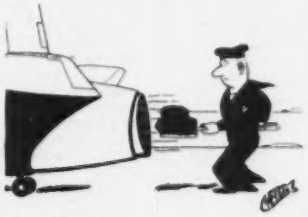
ABOVE and on page 753 are the first illustrations of the new K.L.M. hangar at Schiphol, the airline's main base. The interior, with a capacity for six Constellations, has an area of over 70,000 sq ft. In honour of the famous Australian pioneer, it has been named the "Kingsford Smith Hangar."

Pilotless Power

A CONTRACT for production of "missile motor" components has been awarded by the Aerojet Engineering Corporation to the Ryan Aeronautical Company, of San Diego, California. Ryan, who previously made major components for the Aerobee high-altitude rocket, are currently building complete rocket motors for surface missiles in production by the Firestone Tire Co.

Christchurch-to-Christchurch

A MOVE is being made for next year's international air race from England to Christchurch to start at Hurn airport, near Christchurch, Hants, and so make it a Christchurch-to-Christchurch affair. The president of the Race Council, Mr. H. D. Christie, has said that the organizers are fully behind the idea, but that the type of aircraft competing will be the deciding factor.



Toothless

FROM Solar Aircraft Company of San Diego come details of a method of "toothless band-sawing" which they are using for cutting sheet metal for gas-turbine components. Although the technique is not—as they claim it to be—new (we seem to remember that the S.A.A.B. Company, for one, was using it before the war) Solar do deserve congratulations on successfully adapting it to utilize very economical sawblades, viz., old packing-case hoops!

GOOD PULL-UP: Mr. Duncan Sandys, Minister of Supply, during a visit to the Dunlop Aviation Division, watches a test-bed demonstration of the Maxaret automatic aircraft-brake control. Left to right: Mr. F. C. Limbrey, deputy regional manager (Midlands), M.o.S.; Mr. W. H. Davies, Coventry manager, Ministry of Labour and National Service; the Minister; Mr. J. Wright (partly visible), chief executive, Aviation Division; Mr. O. F. MacLaren, aviation service manager; and Mr. G. E. Beharrell, Dunlop deputy chairman and managing director.

IN BRIEF

THE Home Secretary, Sir David Maxwell Fyfe, with Lady Maxwell Fyfe, last week visited the Belfast factory of Short Brothers and Harland, Ltd. They were accompanied by the Prime Minister of Northern Ireland, Sir Basil Brooke, and other officials.

* * *

Mr. N. McPherson has been appointed a director of the British Aluminium Co., Ltd. He will continue as general manager.

* * *

Vokes, Ltd., are holding an exhibition of their filtration, silencing and other products at the Free Trade Hall, Manchester, from June 20th to 28th. Today, June 20th, is confined to trade visitors.

* * *

Laboratory centrifuges with a wide variety of industrial applications are the subject of a new leaflet published by Sharples Centrifuges, Ltd., Woodchester, Stroud, Glos.

* * *

"Gulflite Turbojet Oil 1010," a new lubricant for gas turbines, has been developed by the Gulf Oil Corporation. Anti-corrosive properties are claimed, as well as the ability to operate at abnormally low and high temperatures.

* * *

The Dorset refuellers used on the Comet route (see description in *Flight* of February 1st, 1952) incorporate Pegson Marlow pumps, made by a company of the Mellor Bromley Group. These pumps are stated to have unusually high self-priming qualities.

* * *

The Magnesium Advisory Committee announces that it has appointed Wenham Brothers and Co., of 21, Bennett's Hill, Birmingham, 2 (Midland 0994-7) as its permanent secretaries. This company also has an office at 15, Tooks Court, London, E.C.4, but enquiries should normally go to Mr. A. M. M. Burdon-Cooper at Birmingham.

* * *

That Dunlop tyre, wheel and brake equipment were fitted to the Comet, Viscount, Ambassador and, in fact, to practically every type of aircraft produced in the United Kingdom in 1951 was stated by Sir Clive Baillieu (chairman) at the annual general meeting of the Dunlop Rubber Company last week. He also referred to the company's new developments in the de-icing of gas turbines.

(Left) No. 17 R.F.S., Hornchurch: F/L. B. R. King, Plt. IV S. E. Punt, Sgt. R. G. Wilkins.

(Right) No. 18 R.F.S., Fairoaks: F/L. F. E. Rowe, F/L. L. Staples, F/L. A. B. Cartwright.

No. 1 R.F.S., Panshanger: F/L. J. P. Blackmore, F/L. F. A. Fox, Sgt. H. W. Crane.

No. 22 R.F.S., Cambridge: F/L. T. C. Pick, F/L. P. J. Q. Back, P/O. J. D. Price.

No. 24 R.F.S., Rochester: F/L. S. D. Reeves, F/L. R. D. Farebrother, Plt. IV J. Homewood.

No. 15 R.F.S., Redhill: F/O. D. A. Twyman, F/O. W. D. Musther, F/L. R. G. I. Elliott.

Encouraging the

—*Among the Reservists: More*

IT is to be hoped that the annual competitions organized by No. 61 Group of Home Command for their Reserve pilots and crews will become an increasingly valuable and popular Service event. Apart from the competitive interest and the incentive to attain high standards among the individuals and schools, an excellent opportunity would be afforded for V.R. pilots to meet their old friends.

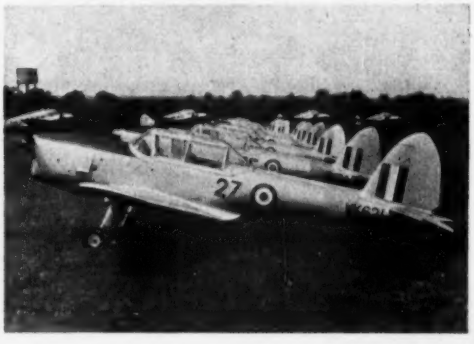
This year's results, following contests flown off at R.A.F. Station Kenley on Saturday, June 7th, were briefly reported last week, together with an account of the occasion. We are now able to present a number of *Flight* photographs of the teams of three pilots, representing each of the six schools in the Group, and some of the aircraft—Chipmunks and Ansons—taking part. The schools concerned were No. 1 R.F.S., Panshanger; No. 15, Redhill; No. 17, Hornchurch; No. 18, Fairoaks; No. 22, Cambridge; and No. 24, Rochester.

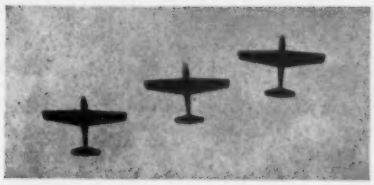
Three trophies are awarded each year: one for the crew competition—in Ansons, each flown by a staff pilot, carrying one navigator and one signaller from the Reserve School; a second for the pilots' competition, for teams of three Chipmunks flown by genuine Reservists (as opposed to instructors or professional pilots); and a third for the highest aggregate of marks obtained by one school in the two competitions. For the second year running No. 18 R.F.S., Fairoaks, won the pilots' competition and the combination trophy, while No. 24 R.F.S., Rochester, won the crew cup. The totals of marks obtained were given last week, and the breakdown, indicating the degree of proficiency attained in the individual manoeuvres in the pilots' competition, is included below.

Detail requirements in the pilots' competition are as follows: three pilots selected from those engaged at the time of the competitions upon their 15 days' annual continuous training fly the following sequence of formations in Chipmunks: (*a*) take-off in vic; (*b*) fly-past at 1,000ft above the airfield in vic, line abreast, line astern and echelon; (*c*) land in vic. The time limit for the event is ten minutes, with a penalty of ten marks for each minute over. Marks are lost for unnecessarily long or short runs, flying dangerously close—particularly on take-off or landing—slowness in changes of formation or turns, raggedness or unsteadiness in formation at any stage, and crabbing.

On completion of the formation flying the aircraft again take

Competing aircraft—Chipmunks and Ansons—awaiting their turn to fly at Kenley airfield.





(Left) Indicative of the high standard of formation flying by the winning trio.

The two judges: G/C. G. N. J. Stanley-Turner, C.B.E. (right) and S/L. P. A. S. Thompson, D.F.C.

Competitive Spirit

About the No. 61 Group Contests

off, this time independently, and orbit the airfield at 2,000ft. On receipt of a Very signal from the ground, the first two, in turn, cut their engines and make a forced landing over a line marked on the airfield.

The third aircraft of the trio next carries out a display of aerobatics. This consists of two slow rolls, two barrel rolls, two loops, two rolls off the top, two half-rolls, and two stall turns. Recovery from all aerobatics has to be completed above 1,000ft over the airfield, and marks are given for airmanship, execution, continuity and positioning. Having completed this display, the third pilot returns to 2,000ft on the airfield circuit and waits for his signal to make a forced landing.

Marking for the pilots' competition is as follows: the total obtainable is 300 marks—120 for the formation display, 100 for forced landings, and 80 for aerobatics. The judges make deductions under the headings mentioned above and, in the case of the forced landing competition, the numbers of yards by which each competitor overshoots the line are added together, disqualification (undershoot or failure to land) being taken as plus 500 yards.

The crew competition is designed to test the abilities of the navigators and signallers to perform their tasks, and to test their co-operation as a team. An exercise entailing the flying of a triangular course of approximately three hours' duration is set and navigation is by dead reckoning, with the use of all aids at the navigator's disposal. Consideration is given to the navigator's judgment in the selection of aids and his use or rejection of information obtained. The minimum activity required is four position-lines per hour, two wind velocities per hour, two drifts per hour, and one course check per leg. The signaller's job is to provide the navigator with the information he requires and to conform to the air-traffic control procedures. He is judged on the speed and accuracy with which he passes signals and obtains information, and upon procedure and co-operation.

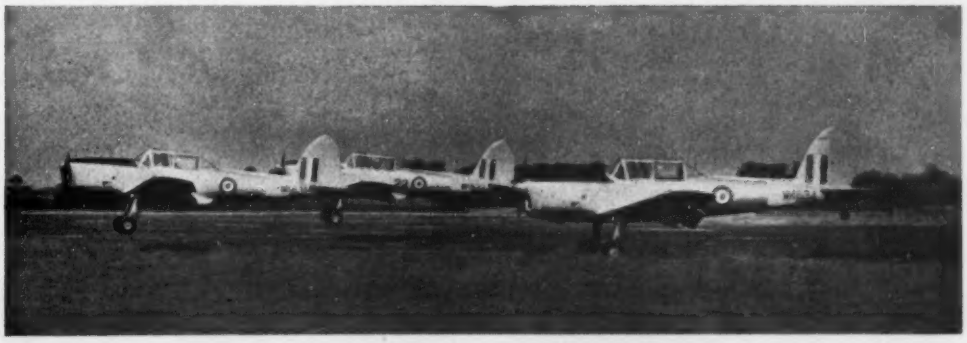
MARKS AWARDED

	No. 1	No. 15	No. 17	No. 18	No. 22	No. 24
Formation	87	103	86	95	85	93½
Aerobatics	48½	59½	41½	57	50	51½
Forced landings	—	80	10	100	36	60
Totals ...	135½	242½	137½	252	171	205
Navistor	77	80	86	80	87	79
Signaller	77	70	74½	77½	72	90
Totals ...	154	150	160½	157½	159	169
Grand Totals ...	289½	392½	298	409½	330	374
Forced-landing distances (yds.)	500	120	298	85	208	162
	26	60	119	25	216	44
	47	91	123	73	37	190
	573	271	540	183	461	396

Notes: No. 1 of No. 1 R.F.S. overshot; No. 1 of 17 R.F.S. penalized 10 marks for landing dangerously; No. 22 R.F.S. team penalized 4 marks—two aircraft too far up and one landed during a side-slip.

(Right) A representative forced-landing approach by F/L. Elliott (15 R.F.S.) The engine was cut at 2,000ft on receipt of a ground signal and the object was to touch down with the tailwheel as close to the far side of the white line as possible. Chipmunks are not the easiest of trainers for such a practice, straight side-slipping being of doubtful value and flaps not very effective.

(Below) A creditable formation landing by Fairoaks during the pilots' competition.



SINGLE-ENGINE SAFARI

From Paris to Central Africa and Back in a Four-seater: Part II—Coming Home

By LORENZO A. de MORELOS

THIS is the second and concluding instalment of a French private owner's account of a trip which he and a friend undertook last summer in a four-seat Navion. In Part I, published last week, he described the outward journey from Paris to the Belgian Congo. They spent a month there, mainly on sightseeing trips, then began the return journey, as related in this article.

GOMA is over 5,000ft high and the airfield is only 1,000 metres long; under such conditions, the Navion could not have taken off from it with its full load. So it was necessary to take the luggage by road 200 km south to Costermansville, at the other end of the lake. Meanwhile Laurent flew the aircraft there to meet us; the field is built above the town and has a satisfactory runway which, from the air, looks like that of an aircraft-carrier.

In order to catch a glimpse of Lake Tanganyika, we went to Usumbura for a day and flew back to Cost' the same evening. The next morning we left for Entebbe. Between the Ruanda-Urundi and Uganda there are mountains 8,000ft high to pass and no radio aids in our range. There was no shade of resemblance between our whimsical chart and the terrain below us. The dry haze was thicker than what we had met on our way down, and, making matters worse, we were over jungle fires which decreased the visibility so much that we found ourselves flying 10 metres over a road we could hardly see. In these circumstances, and in a country where giant peaks can spring suddenly before your nose, we dared not go on. While looking for the best place on this road for a precautionary landing, we spotted a little brook. Knowing that a stream cannot run directly into the flank of a mountain and that in this area it should flow eventually into Lake Victoria, for more than one hour and a half we rode it, faithfully following each bend; through gorges, sometimes scarcely wider than the Navion, through less mountainous country, and finally over swampy land where the visibility was a bit better, we reached Lake Victoria . . . and breathed again.

The rest was easy. Keeping the lake to starboard for two hours, we arrived at Entebbe and landed on its already mammoth airport, where the main runway was in the process of being further extended.

We visited Kampala, a lovely resort which is organized as only the English know how.

Early the next morning we took off for Nairobi. We kept the huge lake on our right to Kisumu, and then the land began to rise. In beating rain we passed over a 7,500ft plateau which reminded us of Normandy, with apple trees, stud farms, training fields, race-courses, golf-courses, and in addition the famous fields of pyrethrum. The land sloped down to a lake from which flew thousands of pink flamingoes.

Nairobi is perched in the heart of the broad expanse of a 6,500ft plateau; the abrupt escarpment that leads to it was shrouded with fracto- and nimbo-stratus, between which we flew a "slalom." Under the 300ft ceiling we found a large asphalt road which seemed to have been constructed with the thought that flyers might have to land on it, as the telegraph poles were placed about 20 yards away from the edges. We followed this road to Nairobi West airport.

We had thicker grease put in our constant-speed airscrew units in order to reduce the amount of grease thrown on our windshield in the extreme heat to which we were going to return.

Nairobi, the main city of East Africa, is highly developed, very active and Europeanized, with modern, well-stocked stores. We fondly remember the bustling town, as well as its National Park, which is as big as five counties and full of lions, jaguars, buffaloes, hippopotami, rhinoceros, zebras, gazelles and giraffes.

In spite of our ardent desire to push further on into other countries new to us, we had to think of our return, and even of hurrying the return; so we decided to make Juba the next day. We would continue north up the Nile Valley and west along the African coast of the Mediterranean, the route least hazardous in a single-engined aircraft. Nevertheless, we would try to stop as much as possible at places we had not visited on the way down.

After we had passed Kisumu (where the control tower played deaf-and-dumb to our position report), we took a northerly heading. With 15,000ft Mount Epoon in its crown of clouds far to our right, we left the coolness of the impressive region of the Great Lakes and High Plateaux, and refuelled at Soroti. All the natives of the village ran to see us at the field.

Ready to take off, and wanting to show off our knowledge of Ki-Swaheli, we said theatrically, "Goodbye and so long" in their own language to the crowd around us. Then we shut the cockpit and pushed the starter . . . nothing happened! It was a case of vapour-lock again, from the heat to which we had returned. Slightly sheepish, we spent a whole hour trying to swing the airscrew; it finally started and we took off.

After about two hours of flying, we had to admit that our maps had played a villainous trick on us again. With absolutely no radio aid, we didn't have the least idea of our position over the swampy jungle that spread as far as we could see on every side. We talked it over quickly and decided to fly due west—which was definitely not the direction of Juba, but at least we would be certain to find the Albert Nile and draw a fix of our position.

We did find it after two hours and a half, and an hour and a half still later we set down at Juba with our last drops of fuel and in the first drops of a tremendous cloudburst that inundated and obscured everything for 45 minutes. After the storm the atmosphere was refreshed and clear. We made the most of a relaxing swim in the hotel's little swimming pool before going to bed.

As we left at daybreak, a trail of condensation was forming at 40,000ft: it was the Comet, on one of its record-breaking runs.

(Left) Hippopotami in the Ruwenzori area. (Right) "We refuelled at Soroti. . . . All the natives of the village ran to see us at the field."

33rd ANNIVERSARY

of the

FIRST ATLANTIC FLIGHT

On 14/15th June, 1919, Alcock and Brown made their historic flight from Newfoundland to Ireland. Their Vickers Vimy bomber was powered by two 360 h.p. Rolls-Royce Eagle engines.

ROLLS-ROYCE

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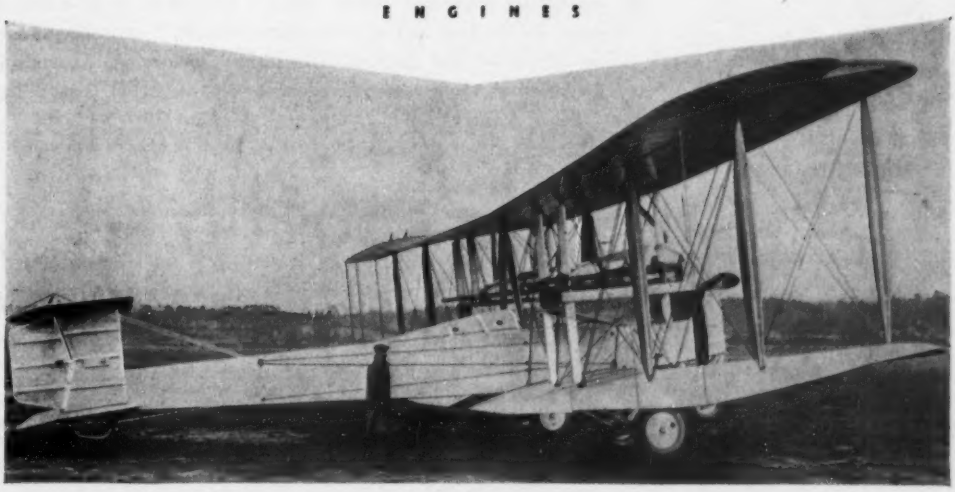
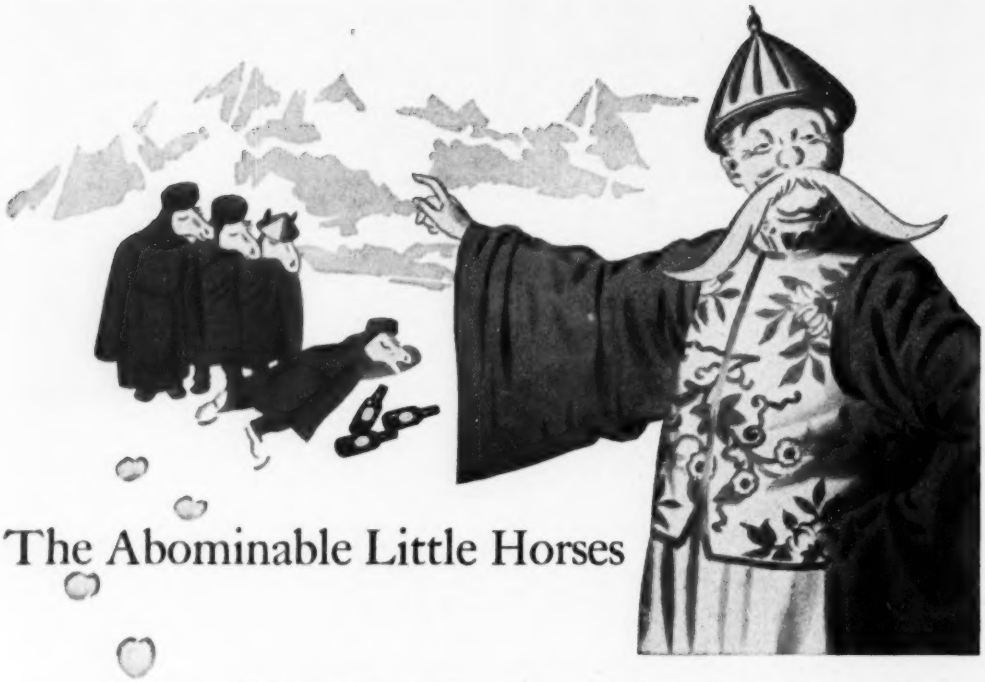
ENGINES





The Abominable Little Horses

"Abominable Snowmen" my foot—said the M.D. They are merely my Little Horses undergoing one of our usual tests. First they run up to the top of Everest and then they run down again backwards. This we call the *Rarefied Atmosphere Test* (Going and Coming). In other parts of the world my Little Horses are on test in deserts *(Coolth)*, under water *(Humidity)* and in Underground Railway Carriages *(High Pressure)*. Also in Selected Government Departments *(Cutting Red Tape)*.

I strongly resent these attempts to capture my Little Horses, particularly by intoxicating them with *Chang*, which I understand to be a sort of Tibetan Barley Beer. In short — shouted the M.D. suddenly turning deep purple — I will thank all Abominable Climbers and Abominable Explorers and all other Abominable Busybodies to ***Leave My Little Horses Be.***

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SINGLE-ENGINE SAFARI . . .

We buzzed for pictures low over herds of elephants and giraffes; circled over Bor; and reached Malakal. The route which had impressed us so much on the trip down was now a game for children, almost monotonous, to "old-timers" like us.

Torrential rains somewhat relieved the excessive heat; we circled Kosti in a slightly sandy wind which had developed into a real sandstorm by the time we landed—not at Khartoum-North airport, near the city (it had closed two days before for enlargement), but at Wadi-Seidna, a hundred kilometres from Khartoum. Here the airport administration was swamped by the sudden descent of all air traffic.

We were looking forward to a full afternoon of flying, and needed only one signature on the aircraft log-book to complete the formalities before take-off. The official whose job it is to provide this signature was an Egyptian doctor. We were told we might expect him any minute; but when he turned up late that evening, it was too late to leave.

The Navion was going to have to stay out all night, and we set about protecting it as best we could from the blowing sand with tarpaulins and blankets tied down with string, and even adhesive tape was used, stuck over narrow openings and vents.

The doctor, who understood our annoyance at being delayed, drove us to town and offered his car and driver for the return to the field in the early morning. An Arab crowd was waiting at the gate for the announced arrival of some celebrity which, quite naturally, they assumed to be us. We will probably never again be cheered so warmly. Even though the reception was not for us, we basked in the spirit of the occasion and the doctor, beaming to left and right, actually ran over the toes of several grinning welcomers.

When the moment came to decide finally the hour at which we would be wanting the driver back again, something—I can't tell you exactly what—made us chuck out of the window our sacred vow against flying by night, and we ordered the car for three hours hence.

The sun was rising when we circled Atbara and met again the little railroad in the desert, and from then on much was repetition: Station 10 . . . Station 6 . . . Station 2 . . . then Wadi-Halfa, where our old friends brought us Coca-Cola . . . Asswan and the locks. In Luxor, two characters whipped open our cockpit, thoroughly sprayed us with clouds of D.D.T. and, ordering us to stay put, locked us up again. There we sat choking for precisely five clocked minutes, after which we were hygienic enough to associate with the natives.

Also repetitive were our official discussions on landing in Egypt proper. As before, there was much talk and no decision. . . .

There was something optimistic about watching the green of irrigation widen and increase instead of narrow and diminish. Then there was Cairo, and we were careful to land this time at Farouk field, and were rewarded by less red tape than at Almaza. We'd spent over 15 hours of the day travelling through the most unpleasant heat of the whole trip.

Next morning, after the formalities of departure and leaving Egypt, we took off between huge four-engined airliners, feeling like a mosquito in a flight of eagles. We detoured for an air-view of Alexandria that we had missed on the trip out. From there we headed west.

A strong head-wind forced us to refuel in Mersa Matruh, which is still in Egypt. But as we had officially departed from that country the problem our case posed bewildered the authorities, who had to refer to the Ministry in Cairo—by telephone, fortunately, but even so it took four hours without a cool drink!

The desert. . . . We gave a position report as we passed over El Adem. We were flying over an ocean of cumulus. We descended through the clouds with QDM procedure to Benina. We spent the night in Benghasi (which an army of German workers and technicians was rebuilding little by little from the ruins), in a hotel that was a real flop-house, managed by a Maltese who didn't bother to brush the flies away.

"We arrived at Entebbe and landed on its already mammoth airport, where the main runway was in process of being further extended."

Marble Arch . . . Tripoli (Castel Benito) . . . Tunis for the night. We left El Aouina early, our mae wests on once again. This time we had a powerful wind against us and we were forced to refuel at Ajaccio.

We landed again at Cannes, where the Customs and police formalities were rapidly completed. Near the end of our trip we treated ourselves to a leisurely lunch at the nice little restaurant on Mandelieu airfield. It proved a bad idea! The Customs and police officers had thought it over and probably made up their minds that one only sets out for a journey like ours for illegal enterprise. For three whole hours they wore themselves out inspecting in detail our luggage and equipment in the vain hope of finding diamonds or some other exotic merchandise of contraband; they searched every corner of the poor Navion, which had nothing to offer them but an egg and a nest in its tailplane—very likely they had been hidden there by a parakeet back in Goma. During that time the met. station was urging us to take off quickly as the weather was rapidly deteriorating on the way to Paris. Finally giving up in disgust, our investigators allowed us to depart.

Tightly packed thunderstorms over the Cevennes, scattered showers at the end of the hop . . . and we made a last landing at Toussus at 2035 hr. The return from Nairobi to Paris had been made in six days, with an average of about eleven flying hours a day.

The mere amateurs that we were on leaving Paris came back enriched with a thousand experiences and an eager appetite for new expeditions which we are already planning.

After the complete success of this enchanting voyage, we must express our unrestricted appreciation to the builders of the Navion and of its 185 h.p. Continental engine which, in the toughest climatic conditions, performed with clock-like regularity; to the Navion representatives in Paris who gave us excellent advice; to the Aéro-Club de France, who supplied us with vital information for our trip; and to Shell particularly, whose services everywhere are irreproachable, even in the most remote areas.

ENGLISH ELECTRIC FELLOWSHIP

THE first award of the English Electric Research Fellowship in Aeronautics, which was recently established by the English Electric Company, Ltd., at the College of Aeronautics, has been made to Mr. G. C. C. Smith, who is in his final year as a student of the post-graduate diploma course at the College.

Mr. Smith is a former scholar of Dudley Grammar School and a graduate of Birmingham University, where he obtained first-class honours in mechanical engineering and gained the Hislop Memorial Prize.

The Fellowship is of the value of £500, tenable for one year. Its purpose is to promote studies in aeronautical engineering, with particular reference to the problems of vibration, stability and control of aircraft. Mr. Smith will undertake a structural research project during his tenure of the Fellowship.

I.A.L. PAKISTAN CONTRACT

A CONTRACT has been signed between International Aeradio, Ltd., and the Pakistan Government for the planning and engineering of a complete radio teleprinter system for the Royal Pakistan Air Force. The radio teleprinter terminals to be supplied are those which have been developed by I.A.L., who have designed them with the specific aim of ensuring continuous operation without the attendance of skilled mechanics. The terminals are so arranged that, in addition to the radio teleprinter and telegraph equipment, provision has been made for instantaneous remote channel-changing and immediate checking of all circuits without attention by specialist personnel. This system will link various distant locations in Pakistan by direct teleprinter communication over radio channels, and thus eliminate the requirement for long landline communications.

U.S. AIR FORCES in EUROPE

The Size of Security: Twenty-six Bases in Britain Alone

ALTHOUGH most of us have at least a general idea of the scope of the NATO programme, the facts given in this article—composed of extracts from a review in the May issue of "Boeing Magazine"—bring home vividly the size of the air power commitment which America, in particular, has undertaken. Harold Manfield, Boeing public relations director, wrote the article.

MOULDING the many languages, national prides and mechanical differences into an integrated force has required the artistry of a Michelangelo. It calls for a United Nations in fact, not alone on paper. The Allied Air Forces Central Europe is tackling the job both in theory and in actual operation. In late spring of 1951, soon after the formation of the command, they put 500 planes into the air for "Exercise Ombrelle." Its first day was renamed "Exercise Frustration" because of the communications difficulties involved—the problems of marrying civilian telephone and telegraph systems under the urgent demands of jet engines overhead.

But the programme went on, and the next exercise found the problem fairly met. It was "Exercise Cirrus" in September, 1951, this time involving 1,050 planes representing France, Belgium, Holland, United States, United Kingdom, Italy, Denmark, and Norway, and operating from 23 bases. Integration of forces began to be a fact. In one instance, at the Belgian station of Chèvres, two Belgian squadrons and a Danish squadron were operating as one unit controlled by one operations room. In the course of the exercise a French squadron was diverted to that base to make use of the same operations office—in a third language. The same day saw U.S. and French F-84s operating as team-mates in a wing, getting signals from a common operations room.

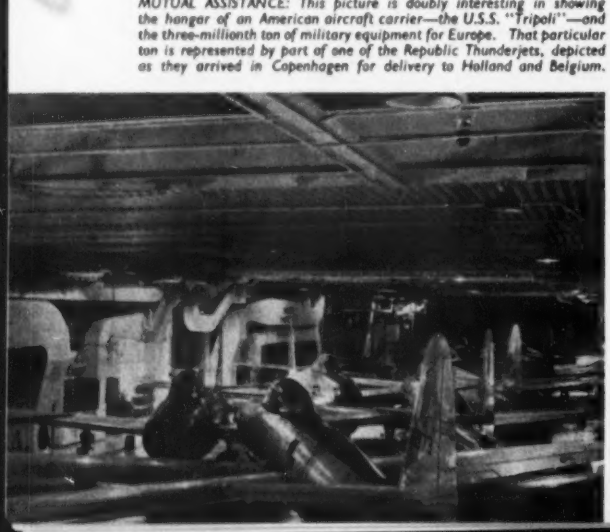
But the mixing of nationalities and operations on foreign bases pointed up a new need—standardization. Early this year an air exercise called "Dedale" was run off in an effort to tackle that shifty problem. Could common tools, common parts, common measurements and nomenclature be set up?

This exercise was on paper only, but it indicated the possibility of 100 per cent cross-servicing of aircraft of various NATO nations on items of so-called "first-echelon maintenance." This means maintenance work that is accomplished by the crew chief, covering servicing, daily inspections and checks at the base where the aircraft lands. Cross-servicing appeared possible for 25 per cent of the items in "second echelon maintenance"—that which is accomplished by the fixed technical support unit at an air base.

Meanwhile, also early this year, Cincsouth (headquarters of Commander-in-Chief, Southern Europe) was running off its largest peace-time naval manœuvres called "Grand Slam." The U.S. Sixth Fleet, French Mediterranean Fleet, British Mediterranean and Home Fleets, and the Italian Fleet operated as team-mates. Their swarms of carrier aircraft tied in with French and U.S. land-based planes from Southern France, British R.A.F. planes from Gibraltar, and Italian and U.S. planes from Italy.

Land-based U.S. air activity in Europe falls into three categories: tactical, strategic and airlift. The tactical forces (fighters, fighter bombers, light bombers, and troop-carrier units) are on the Continent and function in conjunction with the forces of other NATO nations. They are allocated by us to SHAPE. The strategic forces of medium and heavy bombers belong strictly to the U.S. Air Force Strategic Air Command and are under its operational control, although they tie in closely with the Royal Air Force Bomber Command and NATO operations. The airlift consists principally of MATS—Military Air Transport Service—plus some courier and miscellaneous support planes attached to Air Force operations squadrons or Navy fleet aircraft squadrons.

MUTUAL ASSISTANCE: This picture is doubly interesting in showing the hanger of an American aircraft carrier—the U.S.S. "Tripoli"—and the three-millionth ton of military equipment for Europe. That particular ton is represented by part of one of the Republic Thunderjets, depicted as they arrived in Copenhagen for delivery to Holland and Belgium.



Each of these functions—tactical, strategic and transport—depends upon bases, first of all. So that's the big first job of SHAPE and USAFE (United States Air Forces in Europe); building infrastructure, they call it—a 75-cent word which means the things required for defence which you cannot pick up and move.

A formula has been worked out for sharing the bill for these NATO bases. Under it, the U.S. pays approximately 40 per cent of the cost, the United Kingdom and France just under 15 per cent each; other NATO countries pay amounts varying from 3 to 10 per cent. In the case of the British, they pay much of their share in kind, because of the dollar shortage. Land and local utilities are furnished by the local government in addition to its percentage of the base's construction costs.

The installations are not built upon what Europeans consider a "plush basis" but rather to the standards of the country in which they are located, which are below those of America as far as comforts and living conditions are concerned. Such additional facilities as may be required to bring them up to American standards—PXs, theatres, athletic fields, etc.—are strictly up to the U.S. to provide on its own.

Deep and Wide

How big is the air-base programme? Bigger than you think. In order to be flexible in an emergency, it must have depth as well as breadth. This one does. It embraces France, England, the Low Countries, North Africa, and bases in Germany already in operation. For security reasons, discretion does not permit spelling it out in detail; but much of it is already in evidence and hence has reached publication.

A big part of the programme is in France. Its demands thrust themselves somewhat abruptly upon the peaceful French countryside, calling for the displacement of families from tracts that may have been farmed by their forefathers for a thousand years. A good many of the new fields already have been completed and are in operation. Housed temporarily in rows of tents at Toul, the U.S. Air Force 117th Tactical Reconnaissance Wing is operating at this newly constructed base. Reminiscent perhaps of World War I, the 126th Light Bombardment Wing, composed of Illinois National Guardsmen, is likewise tenting at Bordeaux-Merignac field, near Bordeaux. This one is a made-over German airfield. A still newer base is nearing completion at Laon-Couvront.

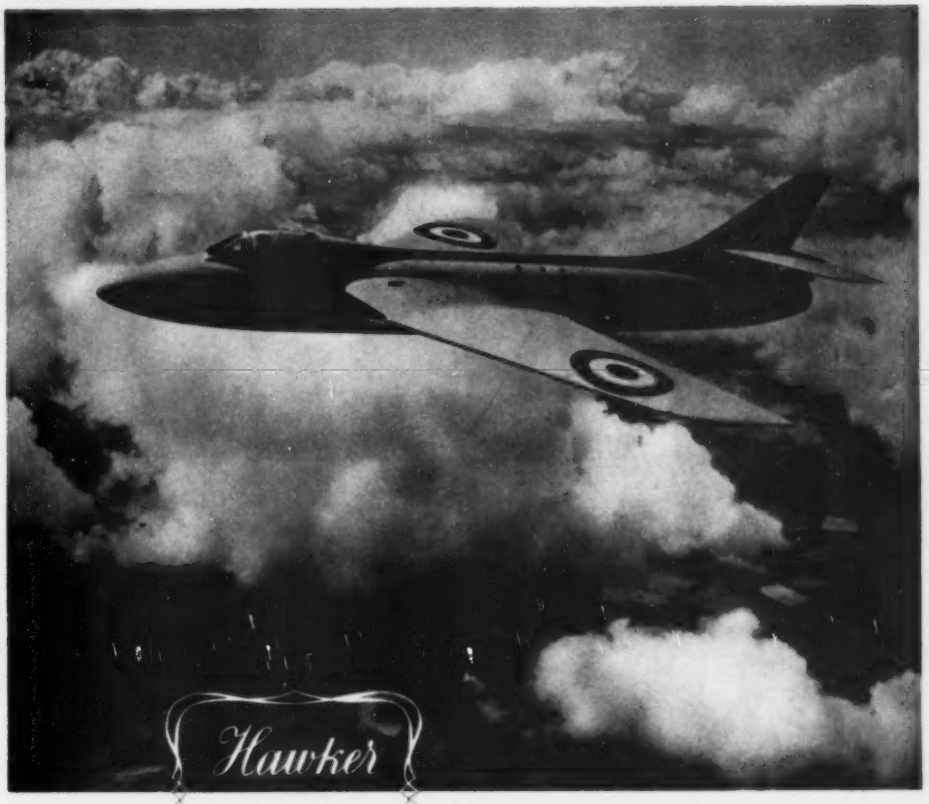
A main base will be Chateauroux, which will be used as a principal supply depot receiving and distributing the beans, engines and writing paper for airmen at bases being set up throughout France.

Moving eastward into Germany—and farther up front—the bases of the U.S. 12th Air Force are well-established, going concerns. The sweeping airfield at Fürstenfeldbruck, near Munich, which was Hermann Goering's old pride and joy, is now thoroughly Americanized as headquarters of the jet-propelled 36th Fighter-Bomber Wing. Nearby, at Neubiberg, the 86th Fighter-Bomber Wing is likewise equipped for tactical and air-ground support missions. At Rhein-Main, Frankfurt, the 60th and 433rd Troop Carrier Wings are regularly rehearsing paradrops. At Wiesbaden is the 9th Air Rescue Squadron. At Erding, near Munich, is the 85th Air Depot Wing, providing supplies and maintenance service to other units in the 12th Air Force.

Farther north, in the British-occupied section of Germany, Bad Eilsen is the headquarters of the newly formed Allied Tactical Air Force, composed of British, Netherlands and Belgian units. Landsberg, Germany, is headquarters for a second Allied Tactical Force.

Across the channel, the United States is spread upon the rolling green map of England like polka dots on a necktie. We have 26 bases, ranging from bomber fields to compact ammunition dumps and radio stations. We're here on a somewhat informal

(*Concluded on page 751*)



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WINNER OF THE GOODYEAR TROPHY

1st P. Fillingham, de Havilland Chipmunk, GIPSY MAJOR 10.

2nd Squadron Leader Loveridge, Miles Hawk Trainer III, GIPSY MAJOR 1.

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The Major 10 power unit of the winning Chipmunk upholds the Gipsy tradition for reliability in the gruelling role of flying training.

DE HAVILLAND ENGINES

(Right) The company's modern office near Aden Airport; the badge (on near wall) consists of a double Speedbird.

(Left) Somali guard on duty at Mogadishu, mid-point on the weekly Aden-Mombasa service.

RED SEA AIRLINE

AS indicated by the external markings of their six DC-3s, Aden Airways are closely affiliated with B.O.A.C. The company is, in fact, a wholly owned subsidiary, though its operations, on a 6,000-mile network, are controlled by a separate administrative staff under Mr. A. de Graaf Hunter. Aden is the focal point for all routes—both local services and those to Ethiopia, East Africa, Sudan, Egypt, Saudi Arabia and Syria. The administrative H.Q., however, is situated in Asmara, Eritrea, which is 7,500ft above sea level and consequently cooler than Aden.

Four of the Aden Airways DC-3s are undergoing conversion by Scottish Aviation, Ltd., to increase their usefulness on the Cairo-Mombasa route. The first has, in fact, been completed and returned to Aden. Originally 26-seaters, the Dakotas are being modified to give much wider flexibility; they will now be available with seats for 40, in high-density form, or for 32—the first-class version. They can also carry 22 passengers plus some cargo; finally, one hour's work will enable all interior fittings to be removed, providing an all-freight version. Interior finish is in dark blue and grey, with duck-egg blue curtains; toilets are forward, and cargo is stowed opposite the entrance door and towards the tail.

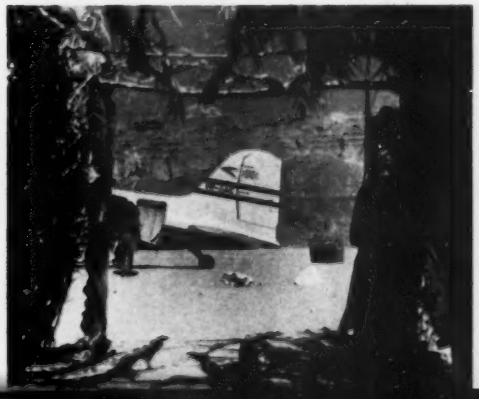
Newly released operating figures give some indication of the scale of Aden Airways' activities. During the financial year ended on March 31st last, the company carried 21,893 revenue passengers on scheduled services and 1,143.5 short tons of freight. Other figures for the year were: revenue passenger-miles, 10,763,341; freight ton-miles, 591,657; aircraft-miles flown on scheduled services, 1,080,342 (an additional 335,716 aircraft-miles were flown on charter operations).

(Above) Freight is weighed at Mukeiras, 90 miles north-east of Aden and linked to it by a tourist service which runs twice weekly.

(Below) Glimpsed from the palm-frond "waiting-room" at Ghurof is Dakota VR-AAC, third civil aircraft to be registered in the Protectorate.

One of Aden Airway's DC-3s (above) is boarded by passengers at Asmara, the capital of Eritrea, which is 50 miles from the Red Sea coast.

Below is a scene at Kamaran Island, on the Djibouti-Cairo route, in the Red Sea. For further information see the famous sign in the foreground.



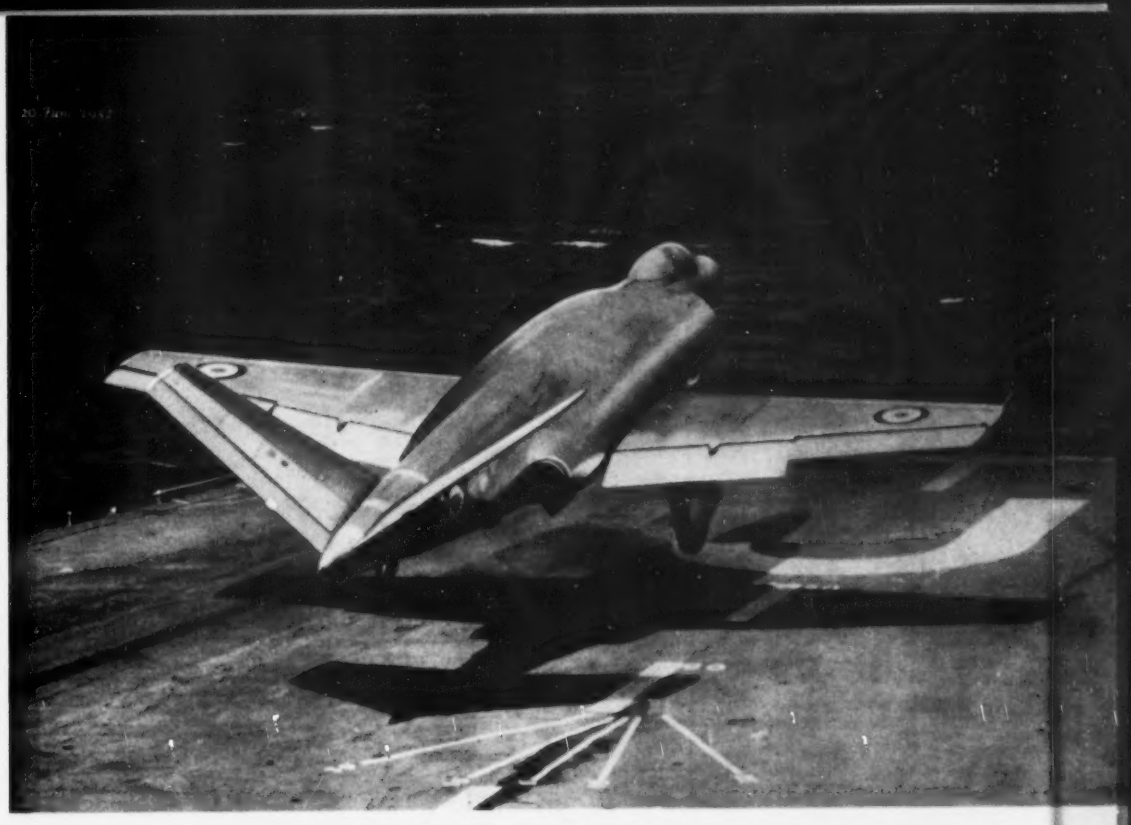
. . . eagle mewing her mighty youth

(John Milton)

THE last two weeks of May saw some of our latest Naval machines going through deck-landing trials aboard H.M.S. *Eagle* (Capt. Guy Willoughby, R.N.), the Navy's newest and largest carrier. They were the Fairey Gannet, D.H. Sea Venom N.F.20, Hawker Sea Hawk F.1, Hawker P.1052 and Supermarine 508. The first two had "landed on" before; the Sea Hawks used were production models and made a large number of catapult launches as well as landings; but for the Hawker P.1052 and Supermarine 508 it was the first time aboard.

On this page (left) the P.1052 is seen landing on. Below it is a picture of Lt. T. G. Innes, R.N., after making the first landing in the P.1052; with him is Mr. "Bill" Bedford, Hawker's assistant chief test pilot. At the foot of the left-hand column Rear-Admiral Neil K. Dietrich, U.S.N., is seen with Capt. Willoughby, and immediately below this text the "508" is seen approaching. At the foot of the page is Mr. Kurry White, Vicker's technical liaison officer, with M. J. Lithgow, after the first landing of the 508. The large studies opposite depict the Supermarine 508 (top) and Hawker P.1052 as they leave the deck.

The first landing-on of the series was made by Lt. Innes on May 17th, and subsequent trials were shared between him and Lt. A. E. Facer, R.N. Both are R.A.E. test pilots. Deck-landing control officer in charge was Lt. Pat Budge, R.N., who has controlled some 7,000 deck landings.



100

The home of Air Service Training is set in the pleasant countryside at Hamble, on the east side of Southampton Water.

A.S.T. COMES OF AGE

The Story of "Britain's Air University"

IN the late 1920s, pilots of the Royal Air Force Reserve received their training at four civilian schools. One such school was at Whitley, near Coventry, and it was run by Sir W. G. Armstrong Whitworth Aircraft, Ltd.

In 1930, Mr. J. D. Siddeley (Lord Kenilworth), one of the Armstrong Siddeley directors, decided that there was a strong case for the establishment of a better school on a new site. For one thing, the training of foreign pupils in the R.A.F. was costing more than the Air Ministry could really afford in that period of depression; and the Ministry was also rather dissatisfied with the continued use of Whitley as a training station, the airfield being suitable only for the lightest aircraft.

Accordingly, Mr. Siddeley began to gather a staff and look for a suitable airfield. His plan was to establish a school offering all kinds of aeronautical training—for both civil and Service pupils from home and overseas. The school was to be run on essentially R.A.F. lines, and the first man Mr. Siddeley approached was G/C. R. J. F. Barton, the commanding officer of No. 1 F.T.S. Netheravon.

G/C. Barton secured his release from the Service and engaged one of his former Netheravon instructors, F/L. H. F. Jenkins, as the first staff member of the new school. On January 5th, 1931, Air Service Training was born, when —still at Whitley—the two ex-officers and Mr. H. J. Day, a clerk, sat down to formulate syllabi.

Meanwhile, Mr. Siddeley had found a home for the school. The Hamble, Hampshire, factory of A. V. Roe and Co., adjoined a good airfield, and the A.S.T. nucleus moved there on January 9th. The aircraft arrived at Hamble during March and April; some were brought from Whitley, while others were new aircraft from Armstrong Whitworths and Avros—Siskins, Atlases and Tutors. On April 9th most of the initial staff arrived, many of whom had come from G/C. Barton's unit at Netheravon. On the 14th of the month Air Service Training unofficially opened with twelve aircraft and ten R.A.F.R. pupils.

The official opening was performed by H.R.H. The Duke of Gloucester on June 25th, 1931—twenty-one years ago next Wednesday—a special train, bearing A.S.T.'s new crest, bringing 66 guests from London.

The first civilian pupil had already arrived by this time; he was an Anglo-American by the name of B. B. Bossom. Other students arrived in ones and twos, and about a dozen were in residence by the summer. The school was, of course, on a comparatively firm foundation, being backed by the

(Left) First published in "Flight" of August 7th, 1931, this picture shows, left to right, F/L. R. P. P. Pope, F/O. M. C. Dudding, G/C. R. J. F. Barton, F/L. H. F. Jenkins, and F/O. R. C. Berlyn; the aircraft is an A.W. Atlas. (Centre) G/C. R. J. F. Barton, O.B.E., the present managing director. (Right) W/C. H. F. Jenkins, O.B.E., A.F.C., director of training; notes on their careers are at the end of this article.

AS prospe... English, Fre... and Spanish, the Sch... vides the most comple... authoritative ... modern in... struction on ... and sea... aircraft.

IN particular its courses ... Blind Flying for Instructors ... great value.

THE whole policy of the School calls for the best only—the best ex-service instructors, the best methods and the best machines. With this policy it is hoped that the Hamble trained pilots will establish a standard of flying not excelled anywhere else in the world.

AIR SERVICE TRAINING OF HAMBLE IS INDEED THE LEADING AERONAUTICAL TRAINING ESTABLISHMENT

and its organisation includes

AT HOME

CIVIL: The Schools of Flying, Navigation, Engineering, Air Marine Radio and Radar, and Technical Officers. SERVICE—Management of: No. 14 Reserve Flying School, No. 1 Basic Air Navigation School, No. 2 Basic Flying Training School (Ansty), The Naval Air Signals Squadron, Southampton University Air Squadron.

OVERSEAS

Management of: Technical Training College, Bangalore (I.A.F.), Apprentice School, Korangi Creek (R.P.A.F.), Transport and Fighter Conversion School, Mauripur (R.P.A.F.).

SINCE ITS INCEPTION IN 1931, Air Service Training has trained over 6,000 Pilots, Navigators, Engineers and Radio Officers and to-day many of these are leading figures in Civil Aviation at Home and Overseas. Also during the late War, some 40,000 service personnel passed out successfully from Air Service Training managed Service establishments.

A Member of the Hawker Siddeley Group

THE REPUTATION OF AIR SERVICE TRAINING HAS BEEN BUILT UP OVER 21 YEARS ON THE SUCCESS AND ACHIEVEMENT OF ITS PUPILS

AIR SERVICE TRAINING LTD HAMBLE SOUTHAMPTON

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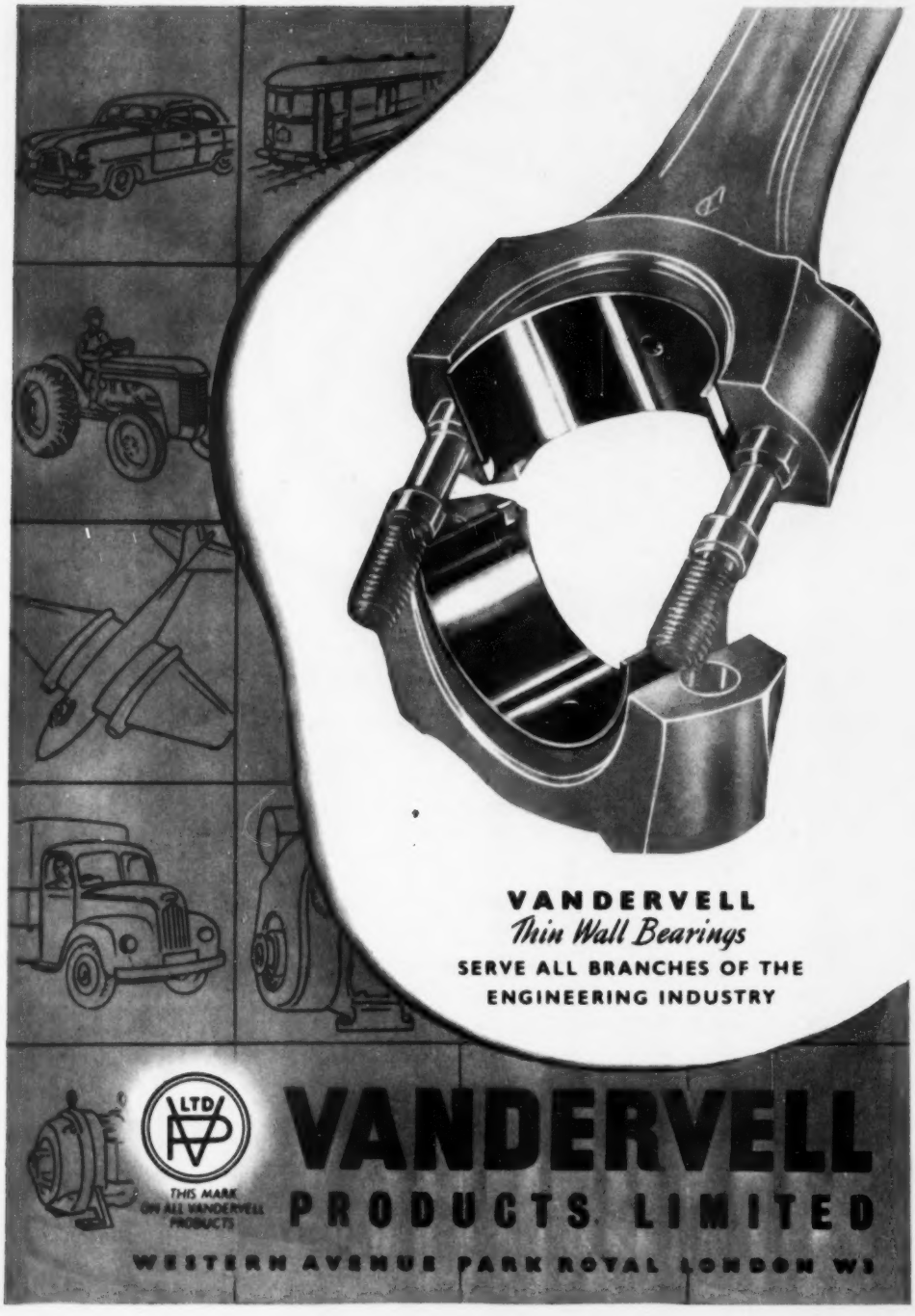
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A.S.T. COMES OF AGE . . .

Armstrong Siddeley Development Co., but in the lean year of 1931 there were those who considered the venture over-ambitious.

Firm promise of business was, however, offered by the school's Service connections, which were strengthened in June 1931 by the decision to send short-service officers to A.S.T. for instructors' licences; the civil side was also given a fillip by a new Air Ministry ruling that all flying-club instructors should be licensed. Yet another side to the school's business was started in September, when permission was given to carry out A.I.D. inspections.

At this time seven courses were offered to pupils, as follows: *ab initio* Service course (12 weeks); commercial pilot's course (3 weeks); combined *ab initio* and blind-flying course (14 weeks); private pilot's course (3 weeks); seaplane course for Service or civilian pupils (3 weeks); instructor's course (8 weeks); and blind-flying course (2 weeks). The aircraft used were the Atlas trainer, Tutor, Siskin and Avian, the first three of these being standard Service types.

In spite of the most unpropitious world economic situation, new Avro Avians were bought in the winter of 1931-2 and a complete fleet of Avro Cadets followed in June 1932. The first foreign officers to be A.S.T.-trained were two members of the Greek Navy who, it appears, did very well at blind flying. Wireless courses began in the summer of 1932, while firm R.A.F. contracts were received, one for comprehensive training on a four-year basis, and the other a seaplane contract. At this time, it was standard practice for airline pilots to hold engineer's licences; Imperial Airways began to send captains to Hamble to obtain such qualifications in 1932.

By the spring of 1933, the old D.H.9Js and the Siskins were retired, the fleet then standing at 26, including a big Avro Five and two Cutty Sarks for marine work. Oxford University Air Squadron and No. 600 (B) Squadron, A.A.F., each visited Hamble with nine aircraft, the former in Tutors and the Auxiliary unit in their new Harts. In August 1933, over 1,000 hours were flown for the first time in one month. Permission to give armament, photographic and wireless training to foreign students was given by the Air Ministry in October, although—significantly—the Foreign Office vetoed the training of German military pilots, who were trying to obtain entry to Hamble in early 1934.

In 1934, British airlines began to look for pilots—there being a shortage of suitable men for the first time—and A.S.T. provided several who met all the requirements admirably. It was in this year, incidentally, that the Hawker Siddeley group was formed, of which A.S.T. has been a member ever since. The school was by now on a completely secure basis, the depression that had overshadowed its early days having passed; growth continued and there were over 100 students in residence by September, 1934. During the year, the Avro Five—G-ABBY—was fitted for wireless and blind-flying training, in which rôles it continued until 1940. Nineteen thirty-four ended with two Russian pilots and an engineer in residence for Autogiro instruction.

On April 1st, 1935, the commercial "B" Licence syllabus was extended to include the new compulsory blind-flying certificate. A.S.T. were, with C.F.S.—then at Wittering—the pioneers of blind-flying instruction, both institutions having to start from scratch and formulate their own procedures and standards. Blind-landing aids were also pioneered at Hamble, the Adcock system having been installed and the more advanced Lorenz system studied.

(Above) W/C. A. H. Abbott, as chief instructor, is responsible for the efficient operation of the four civilian schools and for the Service units at Hamble. (Above, right) W/C. H. A. C. Stratton, A.F.C., is the busy C.F.I. at Hamble; he has been an instructor for 21 years. (Right) S/L. C. N. Hoy, F.R.Met.S., chief navigation instructor. In keeping with a long-established A.S.T. policy these three have all held important instructional posts in the Royal Air Force.

The beginning of the R.A.F. regular and reserve expansion scheme in 1935 implied the provision of new training schools and A.S.T. established one at Ansty, near Coventry—not very far from Whitley. This school opened on January 6th, 1936, and flew 6,906 hours in that year. Another long-term development of this period was the conversion of Imperial Airways pilots to flying-boat work, which—with the delivery of the 28 new Empire boats from Shorts—began to overshadow that operator's land-plane services. Calcuttas were used for this purpose at Hamble from 1935 until all the "Empire" crews had been passed out.

In August, A.S.T. were asked to quote rates for training the R.A.F.V.R., which was then about to be formed. Civilian training was at its zenith at this time (164 students from 23 countries), since, for home students at least, the forthcoming V.R. units would offer training at no cost to the pupil, while foreign students began to fall off in numbers due to international tension and threats of war.

War organization was, in fact, put into operation at A.S.T. in December, 1937; Hamble became No. 3 E. and R.F.T.S. (Elementary and Reserve Flying Training School) and Ansty became No. 9. When war did come, many foreign students found themselves unable to get home and unable to complete their training; a number of Indian students, however, did succeed in finishing their engineering course by December, 1939. All the direct-entry pilots and observers were posted away to other Service schools, their place being taken by 240 W.Op/A.G. trainees.

All Reserve schools were mobilized on January 1st, 1940, Hamble becoming the home of No. 3 E.F.T.S., No. 11 A.O.N.S., and No. 1 Supplementary Wireless School. It was soon decided that the air observer school would have to move elsewhere

Blind-flying training was standardized at Hamble over 20 years ago, on such aircraft as this Avro 621. A.S.T. aircraft are usually doped silver with a black fuselage; some all-silver aircraft are visible in the group (right) which was arranged for a "Flight" photographer in the spring of 1933.

A.S.T. COMES OF AGE . . .

and, after Baginton had been considered, Watchfield was chosen; the unit moved-in in July 1940, followed by the E.F.T.S. staff. Flying for wireless training ceased at Hamble on August 4th, and all flying-training there had stopped by this date. In fact, the only flying at Hamble was that of Spitfire testing, for A.S.T. had become a part of the Civilian Repair Organization under Supermarines at Woolston. Assigned to Spitfire repair—and stated to be the only civil concern doing such work—this side of the company quickly had a payroll of 500, doing a 12-hr day plus a night shift. Though this branch has no primary place in this narrative we may record that, with its satellite unit at Exeter, it repaired very nearly 3,400 Spitfires. Directed by Mr. H. W. Sidwell, O.B.E., A.F.R.Ae.S.—a designer well-known in the aviation world—the Aircraft Division has since become a very important side of the company.

The Air Ministry told A.S.T. to dispose of the old Avro trainers, which soon graced the headquarters of 27 A.T.C. units. Tiger Moths—24 at Watchfield—took their place. Blind-approach training under the S.B.A. procedure started at Watchfield in the autumn, using Oxfords.

After ten years of existence—in 1941—Air Service Training was employing a staff of 2,193 at Hamble, Ansty, Watchfield and Exeter. Ansty became No. 9 B.F.T.S. during 1941, while Watchfield was styled No. 1 Beam Approach School. The former school had an establishment of 77 (and later 108) Tiger Moths; Watchfield used Oxford 1s.

New units opened under the aegis of A.S.T. in December 1941 were No. 3 E.F.T.S. at Shellingford and the R.A.F. School of Air Traffic Control at Watchfield. The aircraft side of A.S.T. was very busy at this time, not only with Spitfire repair, but in converting Spitfires into the first Seafires and carrying out other similar work; a B-17—FA 710—was converted for anti-submarine work at Hamble while, at the end of the war, Yorks were being converted for B.O.A.C. A central establishment for American aircraft was also set up at Hamble, where such types were prepared for British service.

The first post-war training flight took place on August 1st, 1946, and by the end of that year there were 112 ground students (mainly following radio courses) and eight undergoing flying training. The F.E.T. (Further Education and Training) grant scheme supported many of these pupils.

In 1947, the R.A.F.V.R. school and Southampton University Air Squadron started to use A.S.T.'s facilities, while the company's aircraft division began to assume the responsibility of providing flying test-beds for Hawker Siddeley engines—examples being the Mamba-Lancaster and the Sapphire-Meteor. Large-scale Meteor production was also undertaken at Hamble for Gloster assembly. Marine radio courses were commenced in 1948, in which year there were 335 students in residence.

Overseas Schools

Late in 1948 the Indian Government approached A.S.T. with a view to opening an Indian Air Force Technical College at Bangalore. The negotiations proved successful and operations began in 1949. The college trains officers and apprentices of the R.I.A.F., carrying out instruction which, in the R.A.F., is split up among eight different schools. The staff of about sixty are all members of A.S.T.; the commandant is G/C J. Beaumont, O.B.E., A.F.C., and instruction is given under a curriculum rather similar to that found at Halton. Many officers and apprentices have now passed out from Bangalore and their high standard reflects the success of this establishment.

A similar ramification of A.S.T. grew in 1949 in Pakistan. G/C. Barton and W/C. Jenkins were instrumental in establishing a school for R.P.A.F. apprentices, which was opened in January 1950 at the former B.O.A.C. base at Korangi Creek, Karachi.

A. Cdre. F. E. Vernon, C.B., O.B.E., M.A., is the director of studies, assisted by Lt-Cdr. J. R. Le Claire as deputy director. The British A.S.T. staff numbers about sixty.

A third overseas school was opened in July 1950, at Mauripur, Pakistan, to train R.P.A.F. transport pilots; a fighter conversion school was added in July 1951. Together, the Indian and Pakistan schools require the provision of a staff of about 170—all from A.S.T.—and they have played the major part in schooling the Air Forces of both countries.

Today, more than ever before, students are coming to Hamble from foreign countries—about 70 per cent—with the sponsoring of their governments—for complete aeronautical training. It should, therefore, be appreciated that, in addition to the facilities here listed, Air Service Training are frequently called upon to instil into their pupils both a knowledge of English and a basic understanding of what may be termed "Western ideology and customs." The magnitude of this undertaking is underlined by the recent acceptance of ten students who arrived at Hamble three days after leaving their desert home; until they arrived they could speak little English and knew very little of aeronautics.

The schools at Hamble are controlled directly by W/C. A. H. Abbott, A.F.C., who is, in consequence, a very busy man. He came to A.S.T. after a distinguished Service career, his last appointment having been that of Station Commander at R.A.F. Fairford, then an H.G.C.U.

The School of Navigation at present has some 20 courses in operation; under S/L. Hoy, twenty instructors administer to some 150 pupils from many countries. The majority leave with the Flight Navigator's Licence (I.C.A.O. standard) although A.S.T. can train pupils to any degree of competency required.

Service units at Hamble include No. 1 Basic Air Navigation School, using Anson T.21s, for which unit A.S.T. provides servicing, pilots, instruction and accommodation. This B.A.N.S. takes National Service pupils straight from I.T.S. and trains them to within 12 weeks of their Wings. In addition, the Air Navigation school provides all technical navigational instruction for No. 14 R.F.S., who number about 220 pilots, 60 navigators and 35 signallers.

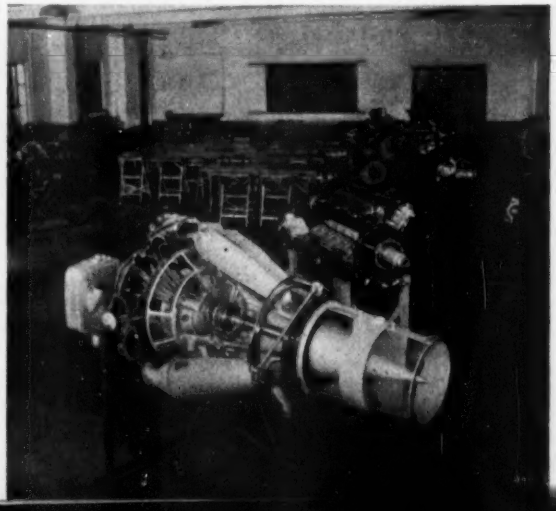
Closely allied to the navigational school, the School of Radio, under Mr. F. Baltrop, began from practically nothing in 1946 but can now provide training for almost any kind of radio or radar operator or mechanic. The principal qualification is the M.C.A. Flight Radio Operator's Licence—which can be obtained from a full-time *ab initio* course lasting twelve months. A special three-month conversion course is also available, giving instruction provisionally accepted for the new first-class certificate of competency under the I.C.A.O. Air Navigation Order, 1949.

Radio and radar mechanics are also passed out by this department, there being a great amount of both air- and ship-borne apparatus available for instruction. A.S.T. offer a Ministry of Transport eight-month course on marine radar and, from January of this year, have provided instruction for the radar maintenance certificate. At present, ex-Service foreign students predominate, but English radio officers will probably soon find more openings for their employment—due, in no small part, to the efforts made by Mr. Baltrop.

Hamble's engineering school has been justifiably renowned ever since it first opened in 1931. Mr. N. A. H. Luke, M.S.L.A.E., A.R.Ae.S., the C.E.I., was, incidentally, once chairman of the S.L.A.E., and is now president. Shortly after the late war there were some 300 students—many holding F.E.T. grants—taking Engineers' Licences; though fewer are now in residence, the quality of output is even higher. Most students take an *ab initio* course lasting two years, at the end of which time they sit for "A" and "C" licences.

There is now—starting this month—a "Diploma" course available consisting, in effect, of the present two-year "approved" course with an additional four courses of three months each. During this extra year such subjects as advanced properties of materials and applications of electronics are studied with a view to fitting the Diploma student for "B," "D" and "X" licences—and, no doubt, for Parts I and II of the A.F.R.Ae.S. examination also.

In order to provide apparatus suitable for so comprehensive a course, a new instructional hangar is being used for the installation of some interesting (largely A.S.T.-devized) testing equipment. This includes a Ricardo variable-compression engine, very fully instrumented; an electronic dynamic-balancing machine; and an "unbalance-measurer" for such items as reduc-



Dominated by a well-kept Derwent, this row of sectioned engines is found in a lecture-room of the Engineering School. Much of the sectioning has been done at Hamble; a Theseus is currently being so treated.

tion gears, in which an oscilloscope records the readings from strain-gauges mounted on the casing of the unit under test.

Finally, the School of Flying re-opened at Hamble in 1946. Today it shares the airfield with No. 1 B.A.N.S., No. 1 N.A.S.S., No. 14 R.F.S., and S.U.A.S., but manages—with consummate ease—to train even *ab initio* pupils to airline standards. The M.C.A. Commercial Pilot's Licence is the usual qualification, but many pupils go on to study for the Senior Commercial, or A.L.T.P. Licence, or that for flying instructors. In addition to the output from Hamble, the B.F.T.S. at Ansty is still training considerable numbers of National Servicemen. Some idea of the facilities offered by A.S.T. may be gained from the present fleet of aircraft, which—including those operated for Service units—reads as follows: Chipmunk, 43; Tiger Moth, 26; Anson, 21; Oxford, 6; Dakota, 3; Auster, 3; Proctor, 1; and Whitney Straight, 1.

A.S.T.'s CHIEFS

G/C. R. J. F. Barton, O.B.E.—Transferring to the R.F.C. from the Army in 1914, G/C. Barton served in France throughout World War I, winning the Croix de Guerre. Granted a permanent commission in 1919 with the rank of squadron leader, he held a number of posts during the 1920s, including the command of No. 28 squadron. He retired as a group captain in 1931, his last command being No. 1 F.T.S. at Netheravon. He is now the managing director of Air Service Training, having formed the school as commandant.

W/C. H. F. Jenkins, O.B.E., A.F.C.—After serving in the R.F.C. and R.A.F. during the Great War, W/C. Jenkins became an instructor at the Central Flying School. He transferred to the R.A.F.O. in 1930 as a flight lieutenant, and has since been responsible for a great proportion of the executive direction of A.S.T.—as chief instructor and, lately, as director in charge of training. Mobilized as a wing commander during the late war, he commanded the schools at Watchfield. W/C. Jenkins was also instrumental in the establishment of A.S.T.'s overseas schools. He is at present making a speedy recovery from an illness, and it is to be hoped with confidence that he will shortly resume direction of the company's training activities.

This demonstration room is typical of many at Hamble; it houses an orderly collection of laboratory and airborne radio equipment. Similar rooms are used for demonstrating aircraft and marine radar.

THE AERONAUTICAL BOOKSHELF

Engineless Aviation

"Theory and Technique of Soaring," by John Kukuski. Illustrated. Sir Isaac Pitman and Sons, Ltd., Parker Street, London, W.C.2. Price 25s.

HOW an engineless, heavier-than-air vehicle is climbed to over 40,000ft and flown over 500 miles in a day must seem something of a mystery to the uninitiated. Mr. Kukuski's book is an attempt to explain those aspects of aeronautical science which have made these feats possible, and it is a worthy addition to gliding literature.

The first third of the book summarizes those aspects of meteorology which help the pilot to be in the right place at the right time. The author includes some of his own theories on the growth of thermals. Then follow chapters on aircraft instruments, aerodynamics and the loads on the structure. There is little here which is peculiar to the sailplane and, since the author has felt it necessary to begin at the beginning, many of the special problems of the sailplane (such as those of instrument power-supply and the best gliding speeds against head-winds and on cross-country flights) have not been discussed.

The next four chapters deal with technique in take-off and landing, circling and soaring, and should prove very useful to all gliding-club members. The chapter on sailplane aerobatics, however, is surely unnecessary. So few sailplanes are stressed for anything beyond loops, stall turns and spins that diagrams showing how to perform outside loops and inverted spins are of very limited interest. We once heard of a sailplane performing a "tail slide" but, as it promptly lost both ailerons, the aspiring novice would do well to ignore this section of Mr. Kukuski's book.

The brief chapter on instructing should have noted that solo training has now been almost everywhere abandoned in favour of dual instruction and that the technique is now very similar to that of power flying.

Nevertheless, the book should be read by all interested in flying and it should stimulate those controversies on which gliding progress depends.

Groundwork

"How and Why of Aircraft," by James H. Stevens and Maurice F. Allward. Illustrated. Putnam and Co., Ltd., 42, Gt. Russell St., London, W.C.2. Price 10s. 6d.

THIS little book "was originally conceived with the idea of supplying the thousands of young people who are now being 'entered' to aviation with an accurate but simple explanation of how the aeroplane and its engine function"; this is the opening of Mr. Frank N. Hillier's introductory note. The publication—which is compiled from articles appearing under the same title in the magazine *Air Pictorial*—sets about the task in a workmanlike manner. The text is eminently readable, as it must be if the book is to serve its purpose. The only criticism that might be made concerns details rather than the general approach to the problem. For instance, the connecting-rod angularity of the Otto cycle diagram on p. 49 implies an engine which goes half-way round and then back again, while on p. 78 the reader learns that "a fighter travelling at 600 m.p.h. is using over a ton of air every *second*" (our italics). But such minor lapses do not prevent us from commending the book to anyone who requires a good jumping-off basis for the subject in general. It is a pity that such a slender publication cannot, apparently, be produced to sell at less than half a guinea.

Engineering Enquire-within

"The Engineer Directory and Buyers' Guide" (1952 Edition). Published by "The Engineer" at 28, Essex Street, Strand, London, W.C.2. Price 5s.

THIS well-known directory provides a comprehensive and inexpensive reference to a very large number of engineering firms. Entry is restricted to firms which advertise in *The Engineer* or in the Directory itself; this eliminates most of the aircraft industry, but as a reference to the heavier or longer-established branches of engineering, the directory is very useful.

On Carburation

"Carburation" (Vol. II, 3rd Edition), by Charles H. Fisher, M.I.Mech.E., M.S.A.E. Chapman and Hall, 37, Essex Street, London, W.C.2. Price 36s.

COMPANION to Vol. I which, published last autumn, treats of carburation theory and design applications, this second volume is a fitting complement in its broad and detailed survey of carburettors and their associated systems. It is thus directed at the reader whose interests are of the less technical and more practical nature.

Whereas in Vol. I, however, some attention was devoted to aircraft carburation, the later volume confines itself wholly to road-vehicle practice. It begins with a chapter dealing with carburettor installation, and discusses such relevant matters as engine type, number of cylinders, firing order, r.p.m., controls and so forth. Useful information on road tuning, performance, acceleration and petrol consumption is also included. The greater part of the book is, however, devoted to detailed descriptions of all makes and models of carburettors likely to be encountered on normal I.C. engines used in surface vehicles in this country.

THE INDUSTRY

Rapid Metallurgical Analysis

AN exceedingly interesting new development in the field of metallurgical analysis has recently been introduced at the London Colney foundries of John Dale, Ltd. It is a direct-reading spectrograph.

Metallurgical analysis by spectrograph has long been established as a practical laboratory method which offers some degree of time-saving, and a reduction of the "human element," by comparison with the classical "wet" method of chemical analysis. The direct-reading spectrograph, however, gives the immense advantage of making possible an analysis of, for example, a seven-element aluminium alloy in but 2½ minutes. A comparable analysis by the chemical method would normally take two full working days.

The equipment now in use by John Dale is of French design and manufacture (Compagnie Radio Cinema, Paris) and, apart from the electronic measuring device which makes possible the direct-reading function, is essentially conventional. The great advantage offered by the direct-reading spectrograph over all other methods of metallurgical analysis is in speed. It means that a sample can be completely analyzed whilst the metal is kept molten in the furnace, and so allows the necessary additions, if any, to be made before pouring or casting is begun. In this way, the production of scrap metal is prevented, and labour and fuel saved on re-melting and re-casting. For the first time, therefore, analytical control becomes a workable factor in the foundry. From a routine aspect, large quantities of ingot material can be analyzed in minimum time and, in addition, the tracing of impurity elements—often laborious, difficult and inaccurate by chemical methods—can be performed with equal speed.

A detailed description of the equipment is to appear in the July issue of our associated journal, *Aircraft Production*.

Gyroscopic History

IN London last week, on two evenings, large gatherings of distinguished guests were entertained by the Sperry Gyroscope Co., Ltd., to showings of three films of unusual interest.

The first was a tribute to Laurence Sperry, an engaging and enthusiastic inventor-aviator who, in 1914, and at the age of 21, flew the Curtiss 14 flying boat fitted with a gyroscopic "aeroplane stabiliser" to win the 50,000-franc prize offered by the organizers of *Le Concours pour la Securité en Aeroplane*. One of the three sons of Dr. Elmer Sperry, the founder of the company, Laurence Sperry died in 1923 when, attempting to fly from Croydon to Amsterdam, he was forced down by engine trouble off Rye, Sussex, and was presumed drowned whilst attempting to swim ashore.

The second film comprised colour shots extracted from ciné records made during bad-weather landings at MacArthur Field (home of the Sperry Flight Research Division), Idelwild, Newark and Arcata, California. This film would have been much more valuable had the extracts of which it was composed been longer, and had the general filmic quality been higher. It was, nevertheless, of remarkable interest. The last film was a well-conceived colour production made for Sperry by Industrial Colour Films, Ltd., and entitled *The Sperry Review of British Aviation, 1951-52*. It dealt with the aircraft displayed last year at the S.B.A.C. Farnborough Show, contained some spectacular flying sequences, and concluded with a flourish on the Comet. Charles Gardner and Frank Phillips shared the commentary, and altogether it was a film we should well like to see again.

SEEING HOW THE LAND LIES

G/C. A. F. Bandidt, who has returned from a three-month air tour to the Far East and Australasia, during which he covered over 40,000 miles. Travelling as the personal representative of Sir Frederick Handley Page, he has been surveying markets for civil and military aircraft and assessing performance that will be needed for operation of aircraft into and out of airfields in many different types of country and climate.

Clever Switch

THE latest item produced by Dowty Equipment, Ltd., is the Dowmic sequence-switch which, it is stated, is a studied effort to eliminate every known kind of defect and incorporate features contributing to reliability and efficiency. The switch is employed to signal the completion of a function, and is also suitable for initiating the operation of one or two subsequent events on the completion of an antecedent one as, for example, undercarriage raised, signal light to pilot "UP," and control valve operated to close undercarriage doors.

The switch is metal-cased and totally enclosed against ingress of dirt and moisture. The cable grommet and the button shroud are of petrol- and oil-resistant synthetic rubber, the grommet providing for the entry of six cables at one end of the case, so facilitating wiring without dismantling. A single 4 B.A. stainless steel screw locks the six terminals simultaneously. The switch rating is 8 amp per contact set (16 amp total) at 28 volts D.C., or 250 volts A.C. (0.15 Henrys inductance in each case). Connections are six sockets taking 5H/24 type standard ferrules locked by one 4 B.A. screw.

Functional tests, it is stated, have proved satisfactory at temperatures between 70 deg C and — 50 deg C, and at altitudes between sea level and 60,000ft. The weight of the unit complete and ready for installation is 4¼ oz (120 grammes).

In the new Dowmic switch, the double-pole change-over contacts enable two separate circuits to be switched, so enabling the Dowmic frequently to replace two switches of earlier types.

Comet Instrumentation

IT is learned from Smiths Aircraft Instruments, Ltd., that, in conjunction with their associated and subsidiary companies, Kelvin and Hughes (Aviation), Ltd.; K.L.G. Sparking Plugs, Ltd., and Waymouth Gauges and Instruments, Ltd., they have supplied a comprehensive range of instruments and allied equipment for the Series 1 Comets.

Among the items of special interest is the Smiths SEP 1 electric autopilot which, in the Comet installation, is adapted for "aileron steering" instead of controlling the heading of the aircraft by actuation of the rudder. The system is installed in series with the powered flying controls, and gives excellent stability.

Following intensive research into the requirements for operation at high altitudes and speeds, a Smiths-Waymouth fuel contents gauging installation has been developed which provides accurate and continuous indication of fuel contents, irrespective of aircraft attitude, movement or height. Indication is provided in the refuelling bay as well as in the cockpit, and an additional safety factor is provided in the cross-switching of amplifiers.

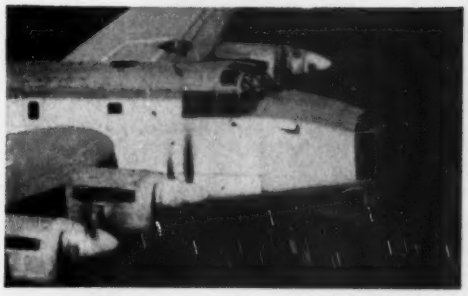
Flight instrumentation includes Kelvin and Smiths air-speed indicators, pressure heads, accelerometers, altimeters, Machmeters, rate-of-climb indicators, time-of-flight clocks, and phase-failure warning-switches. An innovation is the new Kelvin Mach switch which is specially designed to give audible warning to the pilot when the critical Mach number of the aircraft is reached. Engine instrumentation includes engine speed indicator, engine speed generator, synchroscope, fuel pressure switch, compensating leads, oil temperature and pressure indicator (inductor), oil pressure transmitter (inductor), oil thermometer bulbs, jet-pipe thermometers, rear bearing thermometers. Of this group, the Kelvin engine speed indicator is specially calibrated to provide maximum accuracy over the critical range, and the new Smiths A.C. inductor system provides remote indication of oil pressure.

Navigation equipment includes the Hughes periscopic sextant and mounting, A.D.F. compass indicators, and the Hughes P.12 compass. The Hughes periscopic sextant meets the requirements of the new technique of high-speed high-altitude astro-navigation, whilst the P.12 is used as a stand-by to the transmitting compass. Smiths Aysynn A.C. transmission system is used in the Marconi A.D.F. radio compass, all the indicators of which are Smiths'.

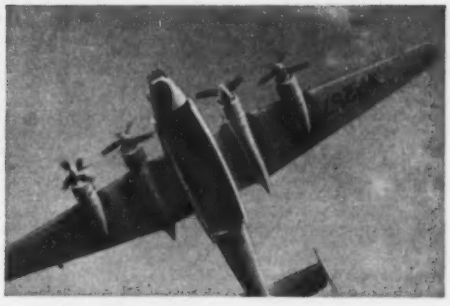
Also from Smiths comes a list of the equipment which they have supplied for the Bristol Proteus 705 turboprop, described in *Flight* last week; it includes engine-speed-indicator generator, standard and rapid-response thermocouples, thermocouple extension leads, H.T. igniter plug, and A.C. inductor oil-pressure transmitter (under test).

Veni...

Vidi...



Vici...

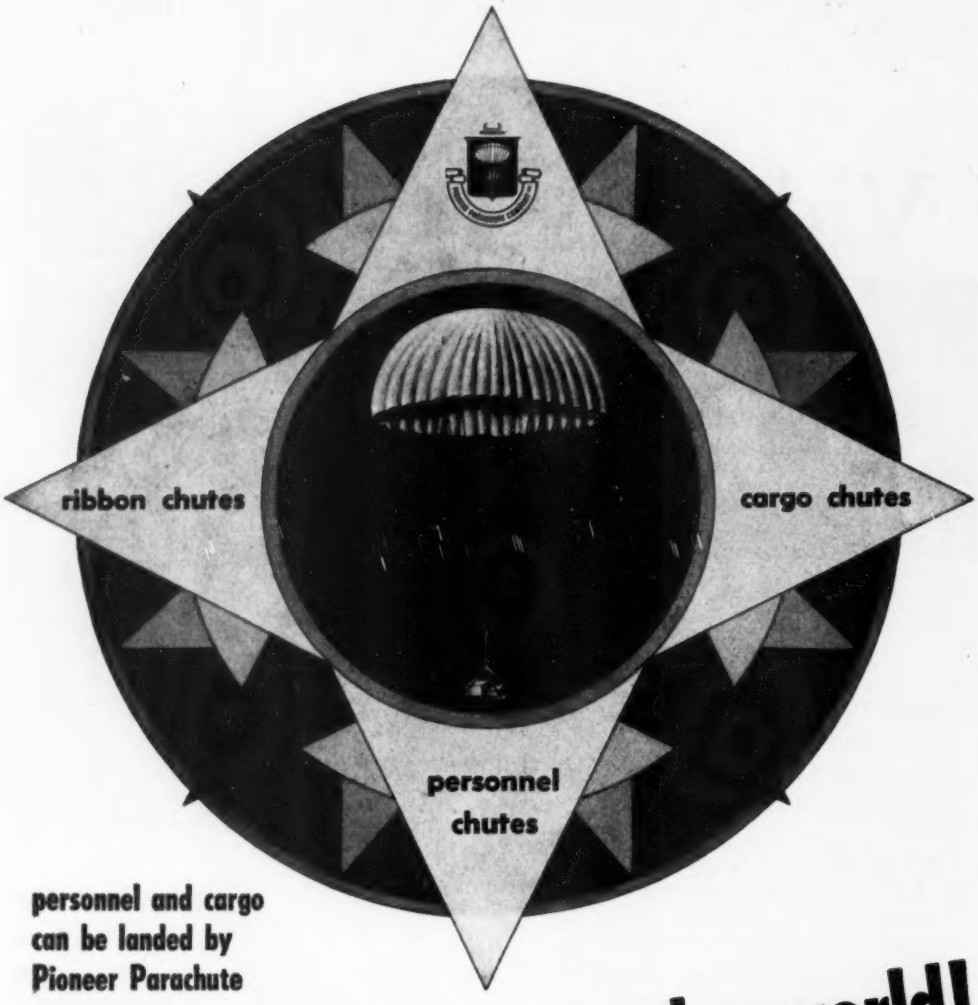


Cæsar's terse message — 'I came, I saw, I conquered' aptly describes the operational advantages of the Avro Shackleton, now in full squadron service with Coastal Command. For the long-range Shackleton 'comes' on a very wide scene indeed, sweeping extra hundreds of square miles per patrol; 'sees' enemy subs and shipping with keen radar eyes; and 'conquers' with a deadly armament of bombs and depth charges. Its comfortably housed crew of 10 gains confidence from the reliability of four Rolls Royce 'Griffon' engines. 'Nulli secundus' is Coastal Command's verdict on the Shackleton.

AVRO SHACKLETON

A. V. ROE & CO. LIMITED, MANCHESTER

MEMBER OF THE HAWKER SIDDELEY GROUP / PIONEER . . . AND WORLD LEADER IN AVIATION



personnel and cargo can be landed by Pioneer Parachute on any spot, no matter how inaccessible...

anywhere in the world!

No matter what has to be landed . . . whether it is fighting men or a pilot escaping from a doomed plane, medical supplies or food, artillery or ammunition, jeeps or giant girders for bridges . . . it can be safely landed by parachute, anywhere in the world! Parachutes, manufactured by Pioneer, are serving the U. N. forces in Korea, have served the Allies faithfully at every point of the compass, landing safely anything that can be carried in a plane.

All these achievements by parachutes and many more now in the stages of further development are the result of the tireless efforts of the U. S. Air Force parachute engineers . . . plus our own research and development departments . . . and the world's largest parachute manufacturing facilities. Parachutes designed for specific purposes, and built by Pioneer, deliver positive performance.

PARACHUTES MAKE THE DIFFERENCE!

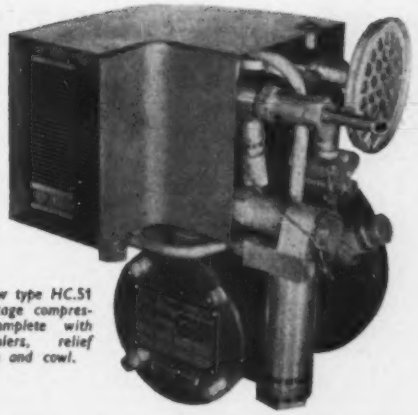
PIONEER PARACHUTE COMPANY, INC.
MANCHESTER, CONNECTICUT, U.S.A.

HIGH-PRESSURE MIDGET

Hymatic Compressor for 3,000 lb/sq in Systems

THE advantages which go with the use of high pressures both in pneumatics and hydraulics have long been recognized, but the progress toward the standard employment of elevated pressures, although steady, has been comparatively slow. In being the first company to obtain M.o.S. type-approval for a 3,000 lb/sq in compressor for use on aircraft, however, the Hymatic Engineering Co., Ltd., Redditch, have achieved something which should materially enhance the adoption of high-pressure pneumatic systems.

Designated Type HC.51, the new compressor is a three-stage air-cooled unit which, for a weight of 10 lb, and with overall dimensions of but 6in by 7in by 8in, has an output of 1.4 cu ft/min F.A.D. at 3,000 lb/sq in when running at its normal speed of 1,500 r.p.m. Astonishingly, the output air temperature is stated to be as low as 80 deg C.

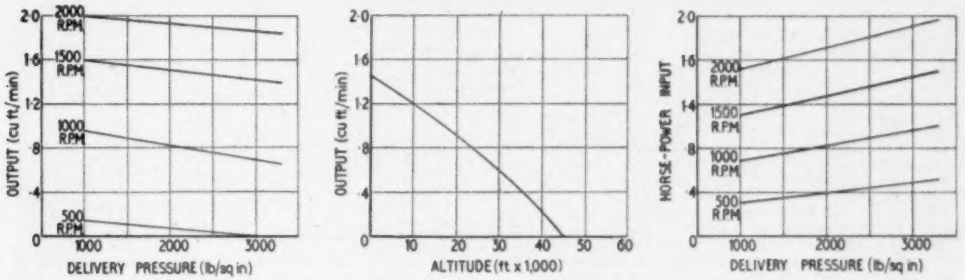


The new type HC.51 three-stage compressor complete with intercoolers, relief valve and cowl.

The new unit embodies many of the features which have proved so successful in the series of Hymatic compressors standardized in British aircraft since 1940. Most important of these features is the truncated piston and stepped cylinder which, by providing a large area of cooling surface relative to the volume, permits a high measure of cooling in the second stage. As approximately equal work is done in each stage, torque fluctuations are reduced, and the connecting rod is usefully employed during both strokes. Lubrication of the upper piston-rings is dependent upon the oil which passes the lower set of rings, but at the same time it is necessary to keep to a minimum the amount of oil delivered with the air. Satisfactory control has nevertheless been achieved and the maximum carry-over is only 5 c.c./hr. To control oil consumption and to minimize air losses past the piston rings, the hardened S. 28 steel cylinder is finished to extremely fine limits. Very close control is exercised over the bore dimensions, as well as on concentricity, freedom from ovality, and surface finish. The diameters are controlled to 0.0006in, and combined ovality and eccentricity are not allowed to exceed a similar value. Such accuracy is a necessity in that the second-stage pressure is about 1,000 lb/sq in and this pressure is trapped between the upper and lower sets of rings.

Air enters the first stage through a filter, and then through a light-weight annular plate-valve to the first stage cylinder. After compression, the air is delivered through a plate valve to a cooler, and thence to the second-stage inlet valve. Although cooling takes place in the second stage, it is necessary to cool the air still further before it enters the third stage, and for this purpose finned light-alloy coolers are provided.

The third-stage components include a Scotch-crank mechanism to operate the plunger. Although the motion is sinusoidal, no attempt is made to balance out the acceleration forces of this system, because they are small and can safely be ignored. The slipper block and cross-head are of cast iron, and this material is also used for the cylinder which, however, has the addition of aluminium fins bonded to it by the Al-Fin process. The ½in-diameter piston is of nitrided steel, and has no rings, the gas seal being maintained by using a running clearance of 0.0001 5in.



(Left) Curves of free-air delivery for varying speeds and pressures. Cooling airflow, 145 cu ft/min; cooling air temp., 40 deg C. (Centre) Curve of free air-delivery at 3,000 lb/sq in at 1,500 r.p.m. against altitude. (Right) Curves of absorbed horsepower for varying speeds and pressures. Cooling airflow, 145 cu ft/min; cooling air temp., 45 deg C.

U.S. AIR FORCES IN EUROPE (Concluded from page 742).

arrangement with the British Government. Under it, we are enlarging and equipping certain R.A.F. bases for our use.

Britain is sharing in the cost by providing real-estate and building materials. The U.S. is paying for construction—labour and equipment—a shade more than half the bill. At the same time the 30,000 Americans in England are converting an average of $100 per month per man, woman and child into pounds sterling to pay for rent and local purchases—a refreshing rain for Britain's drained-dry economy.

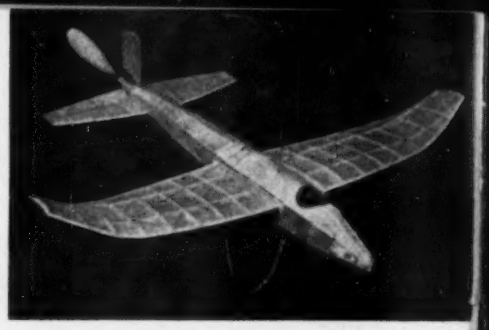
Seven main bases are now in operation, and construction at three others is nearing completion. SAC bomber wings on 90-day rotation training missions in the United Kingdom have spread their Boeing B-50s across three bases in East Anglia: Lakenheath, Mildenhall, and Sculthorpe. Another, at Upper Heyford in the Oxford area, has recently been activated. Three other bomber bases, at Fairford, Brize Norton and Greenham Common, will be ready for use in a few months. Operation of all these is a function of the 7th Air Division of SAC, with headquarters at Ruislip, just out of London.

At Bentwaters and Shepherds Grove in East Anglia the 81st Fighter-Interceptor Wing (including a National Guard squadron from the State of Washington) operates within the defence system of the United Kingdom R.A.F. Fighter Command. A base at Manston in Kent now houses the 123rd Fighter-Bomber Wing. Construction and maintenance of the bases are the jobs of the U.S. 3rd Air Force headquarters, also at Ruislip.

In North-West Africa is the 5th Air Division, which is developing air power in the right wingback position of the NATO team. Here five great bases are being built. All are suitable for launching strategic bombers, but one is to be used as a fighter base and another as an air depot. Two of the five are near completion—a comfort to the French and a wonder to the Arabs.

CORRESPONDENCE

The Editor of "Flight" does not hold himself responsible for the views expressed by correspondents in these columns; the names and addresses of the writers, not necessarily for publication, must in all cases accompany letters.



The model referred to by Mr. J. A. Sizer.

Canada's Industry and British Designers

I HAVE been interested in the correspondence on this subject which has appeared in recent issues, including letters from British designers in North America.

I have recently spent some weeks in the U.S. and Canada, where I met a number of these emigrants, who appear to be disappointed at the small volume of first-class design and technical work, as distinct from modifications, being carried out in Canada. This is not surprising in view of the relatively small population and consequent limitation of funds available, further complicated as it is by the fact that only a very few industrial undertakings in Canada (or, indeed, anywhere in the Empire outside Britain) are endowed with the experience, men and facilities to undertake the full and complete cycle of aircraft design, development and production. In consequence, notwithstanding favourable removal terms and excellent salaries and living conditions, there is a steady trickle of British engineers to the south of the Border.

The loss of good British designers and engineers to Canada and the U.S. is a most serious threat to the future of the British aircraft industry and, unfortunately, it is encouraged at present by the failure of the Government to utilize all the technical skill and capacity on new aircraft design and development available in many British firms. Whilst I am all in favour of the gradual dispersal of defence effort throughout the Commonwealth, there is no short cut in the establishment of complete and experienced aircraft firms, and in my opinion British engineers should think carefully before going to Canada at the present time. There are other factors to be considered than a higher material standard of living when planning one's future career, and amongst these is satisfaction in the class of work one is called upon to perform.

In the U.S.A. there is a large amount of interesting new work and living conditions are, it is agreed, even better, provided the security difficulties surrounding employment can be overcome. Nevertheless, I look forward to the return of many valuable and widely experienced Britons when in due course the inevitable set-back occurs in the stimulating but, I believe, unstable American aeronautical development scene. W. E. W. PETTER,

Hamble, Hants. Managing Director, Folland Aircraft, Ltd.

Salisbury Plain in World War I

THE letter from Mr. Smith-Masters, published in your issue dated June 6th, implies that a substantial proportion of the Army officers who were seconded to the R.F.C. on its formation (or came to it from the Air Battalion of the R.E.s) crashed fatally on Salisbury Plain and that memorials were erected to commemorate their last endeavour.

Having been attached to the No. 1 S.N.B.D. (when it was commanded by Major Baldwin, D.S.O., shortly after the Kaiser's War), I was familiar with the locality, but can recall only one such memorial. Our aerodrome was at Stonehenge and the famous monoliths were actually within its confines. Today nothing remains of the "permanent" hangars which housed the D.H.4 and D.H.9 aircraft of the day flights. The Handley Page 0-400s of the night flights were housed in Bessoneau hangars a mile from the brick buildings. We also had single-seater fighters.

Within a few hundred yards of the Bessoneau hangars stood the only memorial which I can vouch for, and this marked the spot where Capt. E. B. Loraine (Grenadier Guards, attached R.F.C.) and Staff Sgt. R. M. V. Wilson crashed on a Nieuport monoplane on July 5th, 1912.

The episodic flight which Mr. Smith-Masters shared with Henri Jullerot presumably started and finished at Larkhill. It was here that Maj. A. W. Hewetson was killed in July, 1913, but he was an Artillery officer home on leave from India and was learning to fly at the Bristol School for his own edification and enjoyment. In October Maj. G. C. Merrick, D.S.O. (R.G.A., attached R.F.C.) lost his life on a Short type S.38 biplane at Upavon. The final chapter of accidents during this pioneering era occurred in March, 1914, when Capt. C. P. Downer was killed at Upavon when the wings of his B.E.2 collapsed, Capt. C. R. W. Allen and Lieut. Burroughs at Neveravon when the rudder-post of their B.E.4 failed, and Lt. Treeby at Upavon whilst practising on a Maurice Farman biplane.

The above names are recalled in response to your correspondent's statement that "several pathetic little stone memorials" are "scattered about in this district" and that the names they bear should be recorded "before they are lost."

Ryde, I.o.W. FRANCIS A. KAPPEY.

Historic Modelling

YOUR columns have from time to time made reference to that rather remarkable effort of 1911, the Paulhan-Tatin Aero-Torpedo. Recently, on leave, I dug out a 1912 issue of your excellent journal and found some scale drawing of this aircraft. I designed and built the 1in : 1ft flying scale-model shown in the enclosed photograph. The model shows great promise and is fast and stable.

Bristol, 7. J. A. SIZER.

[The photograph is reproduced above. The Paulhan-Tatin machine was an advanced, very clean design; it achieved, we believe, nearly 90 m.p.h. on the power of a 50 h.p. Gnome engine, which was mounted just behind the cockpit and drove the tail propeller by a 20-ft shaft.—ED.]

Pioneer Aeronautical Draughtsmen

IN regard to the letter from J. R. Anderson in your issue of May 30th anent very early aeronautical draughtsmen, let us at least give credit where credit is due.

Dr. A. P. Thurston was employed by Sir Hiram S. Maxim on the design of the latter's *captive* aeroplanes—large merry-go-round amusement machines. One of these was erected and run at the Crystal Palace, Sydenham, another at Liége, Belgium, and a third at Blackpool. The writer believes that five of these ventures were built altogether. They were not an outstanding success and, to use Sir Hiram's own expression (*vide* his autobiography), "This little attempt to make one hand wash the other" resulted in his having to defend an action in the High Court, and the whole venture (as far as he was concerned) ended in financial loss.

The draughtsman employed by Sir Hiram on his famous steam aeroplane, experimented with at Baldwyn's Park, Bexley, Kent, in 1894, was the late Sidney Hollands, who worked in this capacity for Maxim from 1891 to 1893, and was thus probably the first aeronautical draughtsman, anywhere in the world, to be engaged as such and to receive a salary as such. The world's *very* first aeronautical draughtsman, of course, was Leonardo da Vinci, who designed aircraft in 1505; but, presumably, he was self-employed as regards this aspect of his many-sided career.

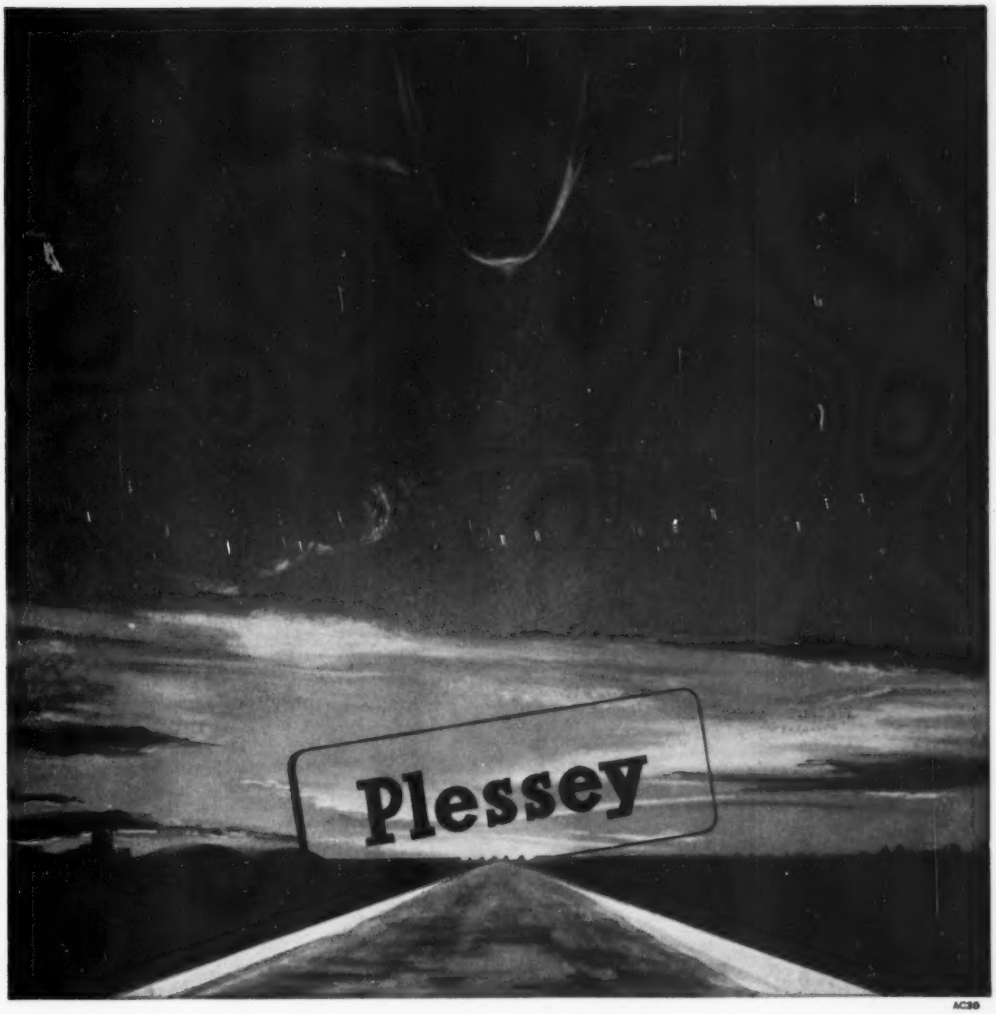
The writer knew Mr. Hollands personally.

London, S.W.17. E. V. HAMMOND.

[Dr. Thurston confirms that the facts given above are substantially correct, though he adds that Sir Hiram had two motives in building the "captive flying-machines": one was to raise money for his true aeronautical experiments; the other was to interest the public in the physical sensations of flight. Dr. Thurston states that he helped Sir Hiram with the petrol-driven biplane which he built at Crayford between 1907 and 1910.—ED.]

FORTHCOMING EVENTS

June 21. Boston Aero Club: Display.
June 21-22. Aéro-Club de Basse Normandie: Fiers Rally.
June 22. S.M.A.E.: "Flight" Cup Models Contests, Butlin's Holiday Camps.
June 22. Aéro-Club de Sivoie: Aix-les-Bains Rally.
June 24. Golf: R.N. v. R.A.F., Sandwich.
June 25. Golf: R.A.F. v. Army, Sandwich.
June 27. London Aeroplane Club: Midsummer Dance, Hatfield.
June 28. R.N. Air Station, Eglington: Air Day.
June 28-29. Aéro Club d'Eure et Loire: Rally, Chartres.
June 28-29. R.Ae.C.: La Baule Rally.
June 29. Northern Heights Model Flying Club: Gala Day, Hawker Airfield, Langley.
June 30-July 13. International Gliding Contests, Spain.
July 4-7. Aéro-Club de Belgique: Control-line Models World Championships, Melsbroek, Brussels.
July 5-6. Aéro-Club de Touraine: Wines Rally.
July 5-7. R.Ae.C.: Deauville Rally.
July 6. Aéro-Club d'Auvergne: International Air Meeting.
July 6-13. Ailes Ardennaises: Air Fête.
July 10-14. Wakefield Cup Models Contest, Norrkoping, Sweden.
July 11-12. National Air Races, Newcastle-on-Tyne Municipal Airport.
July 19. Leicestershire Aero Club: Rally, Leicester East.



AC30

Behind every take-off

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Plessey

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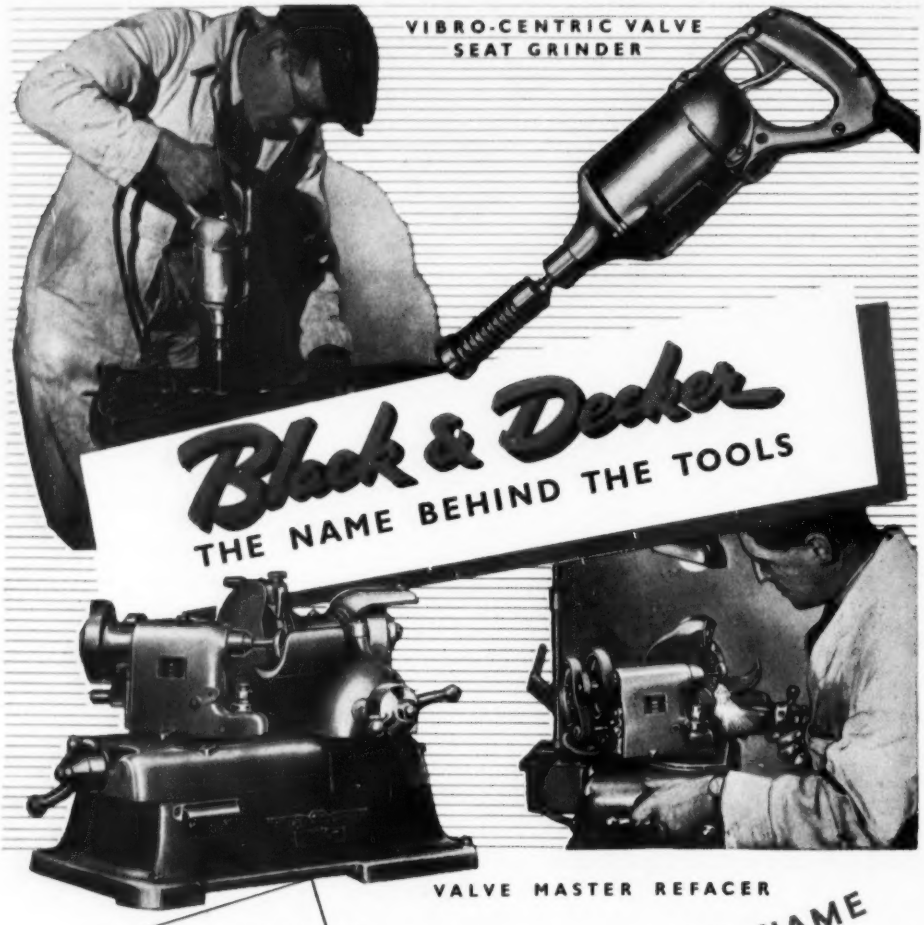

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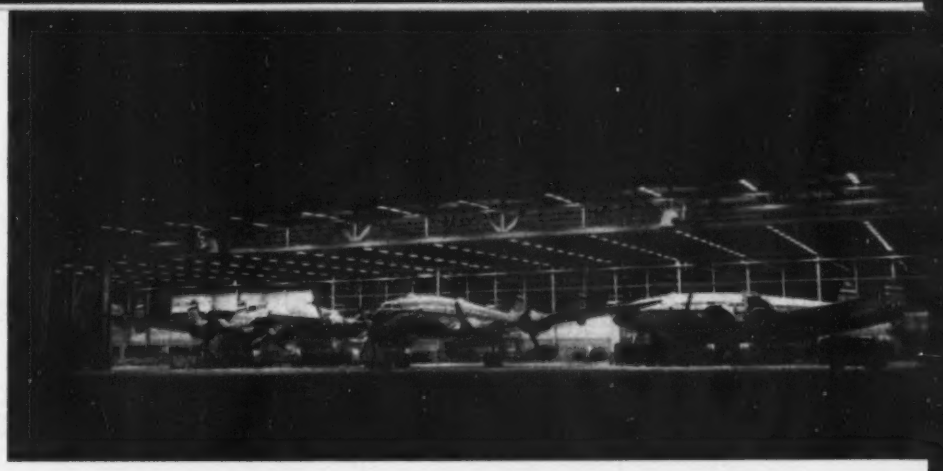


DUTCH INTERIOR: Part of the new K.L.M. hangar (also illustrated on page 737) is shown in this attractive night scene from Schiphol. Three of the company's Constellations are gleaming under the brilliant hangar lighting.

CIVIL AVIATION

B.E.A. IN MAY

DESPITE the fuel restrictions, which halved B.E.A.'s services towards the end of May, there was a 10 per cent increase in the total number of passengers carried (106,700) compared with May, 1951. The petrol shortage had a less serious effect on the domestic routes which, in any case, are unharmed by the reduction in the travel allowance, and the internal services actually showed an increase of nearly 20 per cent (the number of passengers carried was 44,300 compared with 37,100 in May last year); but the international services showed an increase of less than 6 per cent, carrying 62,400 passengers—3,300 more than in May, 1951.

MORE K.L.M. FLIGHTS TO AUSTRALIA

AS part of a plan to increase the number of Dutch emigrants flown to Australia, K.L.M. is to operate thrice-weekly emigrant flights to Perth in 1953. Two of the services, which are additional to the weekly K.L.M. flight to Sydney, will be extended as far as New Zealand. The new services will be operated by Lockheed 1049C Super Constellations. K.L.M. has ten of these compound-engined airliners on order, and had hoped for delivery of the first during the coming autumn; Lockheed, however, now forecast "early 1953."

SUCCESS OF NEW ATLANTIC SERVICES

COMMENTS on the success of the new low-fare transatlantic services have already been made by executives of two airlines. Speaking in Vienna last week, Mr. H. R. Harris, vice-president in charge of PanAm's Atlantic division, said that the introduction of the new fares had proved "much more important than any of us had realized." In April and May, 1951, he said, the average number of passengers flown from New York to Europe by all carriers was just over 2,400 weekly; now the average was 4,800, of whom half flew on first-class services.

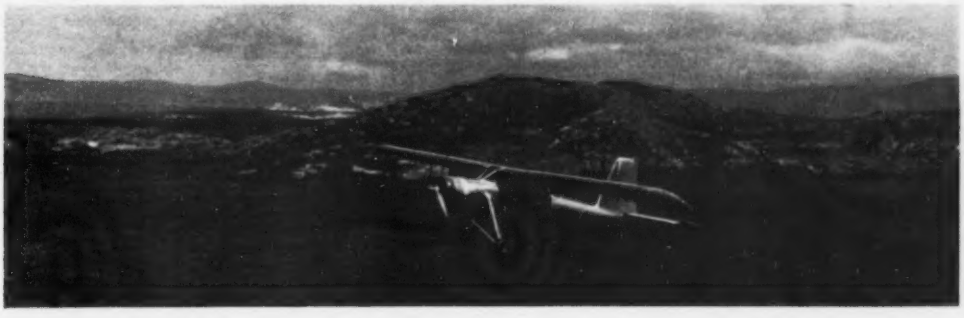
Similar feelings were expressed by Sir Miles Thomas, chairman of B.O.A.C., when he returned to London after a week-end trip to New York: "There is no doubt about the success of our transatlantic business today. In the two years 1950-51 we [B.O.A.C.] increased passenger-carryings by 169 per cent. Forward bookings as at today from New York are 97 per cent higher than this time last year; even in May, when petrol cuts were imposed, we carried 2,684 travellers, as against 1,711 in the same month of the previous year." He added that the cheaper Mayflower service must have tapped entirely new markets, for the first-class services were attracting more business—most of it dollar-worthy—than before.

Sir Miles had a word to say on American reaction to B.O.A.C.'s introduction of the Comet. American manufacturers and operators now realize, without rancour but with envy, that Britain had a solid lead of four years in this field of jet propulsion. Nevertheless, he said, it was a sobering thought that seven years after the war there did not exist a British airliner which could show economic operations on the North Atlantic. It would be two years before the urgently needed Britannia and Avon-Comet were available, and we should be hard-pressed to bridge the gap.

INTERNATIONAL PILOTS' MEETING

AT the annual conference of the International Federation of Airline Pilots, held recently at Sydney, it was pointed out by Capt. T. H. Farnsworth of B.O.A.C. that minimum runway lengths required by I.C.A.O. for certain regions—those, for example, where temperature reached 100 deg F and humidity was 80 per cent—fell short of desirable standards by some 17 per cent. The conference resolved to refer the matter to I.C.A.O. Delegates decided that weather forecasts from ships should be passed direct to aircraft, and should be accepted on the same basis as those from land stations; it was also felt that weather reporting should be speeded up and that governments should devote more funds to the support of meteorological stations. It was decided to press for the introduction of airborne radar—both for detection of turbulent areas and congestion of air lanes at the busier airports, an especially critical problem for jet transports. The conference was attended by 24 delegates from 19 different countries. Capt. C. Sayen (U.S.) was elected president of I.F.A.P., with Mr. D. Fellows, secretary of B.A.L.P.A., as federation secretary. Chicago will be the venue of next year's conference.

SCOTTISH AVIATION'S Prestwick Pioneer II last week visited the small islands of Mull and Iona to demonstrate the efficacy of suitable fixed-wing aircraft on remote routes lacking proper airfields. Mr. N. J. Capper, the company's chief test pilot, landed and took-off the aircraft in less than 100 yards. He was accompanied by Mr. D. F. McIntyre, managing director of Scottish Aviation, whose projected twin-engined, 16-passenger Pioneer III promises to be very suitable for the Highland and Island routes. The aircraft was demonstrated at the R.Ae.S. Garden Party *(see pages 732-733).*



CIVIL AVIATION . . .

BREVITIES

NEXT month B.O.A.C. will send a Comet I on a 9,000-mile proving flight to Tokyo. The flight will be commanded by Capt. A. M. Majendie, captain of the Comet fleet. From Singapore, the farthest point yet reached by the Comet, the aircraft will fly to Tokyo *via* Manila.

* * *

Airwork, Ltd., and Hunting Air Transport, Ltd., launched their new "Safari" service between London and Nairobi with a reception at Londonderry House on Friday, June 13th. Vikings of both companies took off the following day to inaugurate the service.

* * *

The first of four Bristol 170 Wayfarers ordered by Aer Lingus was flown to Dublin from Filton on June 11th by Capt. I. B. Hammond. Delivery of the remaining three should be completed by the autumn. The first Type 170 delivered to Aer Lingus for crew training is now in service—as a freighter.

* * *

A contract has been placed by B.O.A.C. with Redifon, Ltd., London, S.W.18, for the design and development of a flight simulator for the Bristol 175 Britannia. With the Stratocruiser flight simulator installed at B.O.A.C. Central Training Unit, and the Comet flight simulator nearing completion, the Bristol 175 unit will be the third device of this type to be built for the Corporation by Redifon.

* * *

Representatives of Aer Lingus recently visited the United States for ten days to explore the possibility of opening an Irish transatlantic service. On return, it is reported, they expressed hope that "the Irish flag will, within one year, fly the Atlantic . . . in conjunction with one of the largest internal airlines in the U.S.A." The aircraft, it was added, would be American-owned but Irish-registered. After the war Aer Lingus planned to operate North Atlantic services with five Constellations, but these aircraft were sold to B.O.A.C. early in 1948.

* * *

The Shell Petroleum Co. have ordered a Short Sealand amphibian for coastal duties, ambulance work and ferrying of personnel and stores in Borneo. Last week Vestlandske Luftfartselskap, the Norwegian company operating between Bergen and Trondheim, took delivery of its second Sealand.

* * *

Hunting Air Transport, Ltd., announce the appointment of Mr. Brian Greensted as technical manager controlling the company's operations and technical services. Mr. Greensted was trained as a pilot by A.S.T., which company he later joined as a flying instructor. Throughout the war he was chief test pilot for Rotol, Ltd., and for his services was made M.B.E. in 1945. After the war he joined Skyways, Ltd., becoming chief pilot in 1948 and receiving the King's Commendation for his work on the Berlin Airlift. His flying hours total 12,000.

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Mr. A. H. Milward, O.B.E., B.A., has recently been appointed controller of operations B.E.A., with direct responsibility to the chief executive for all aspects of the operation of the Corporation's services. This new post is intended to control and co-ordinate the work of the commercial, traffic and flight operations departments. Mr. Milward, who served in the R.N.V.R. as a pilot with the rank of lieutenant-commander, joined B.E.A. in 1946 and was appointed general manager Continental services. In November, 1951, he became director of aircraft movements.

A.R.B. ANNUAL REPORT

PROGRESS in the introduction of new aircraft, and the development of standards—both British and international—under which they are operated, are reflected in the 15th annual report of the Air Registration Board. The report was to be read yesterday at the annual luncheon of the A.R.B. by its chairman, Lord Brabazon of Tara.

In his introduction, Lord Brabazon referred to two features of the Board, which, he felt, enabled it to face and solve its problems without causing undue delay or inconvenience to manufacturers or operators. These were, first, the comparative youthfulness of its members and staff, and, second, the amount of time ungrudgingly given by his colleagues on the council in the cause of air safety. Lord Brabazon then reviewed the activities of the A.R.B. for the year ended March 31st.

Following the introduction of new materials and the greatly increased utilization of aircraft during the last few years, a need had arisen for more positive steps to avoid fatigue troubles. The result of test programmes would be both expensive and lengthy, but the importance of the matter justified pursuing them with the utmost vigour. On the subject of crash-injury research, it was stressed that all safety measures have to be balanced according to their effect on air transport as a whole. The most important source of information regarding the crash problem was the first-hand investigation of accidents; it had thus been arranged with the M.C.A. that the Board would immediately attend any accident likely to provide new data, and it was hoped that information on military accidents would also be made available to A.R.B. Recent trends towards coach-type travel had emphasized the need for careful consideration of interior layouts to minimize crash injuries. The Board believed that backward-facing seats were fundamentally capable of offering better protection and welcomed the steps being taken by some operators to put such seats to practical tests. Nevertheless, it was felt inappropriate to demand the use of backward-facing seats, as considerations beyond A.R.B.'s province were involved.

During the year the Board undertook, on behalf of the Ministry of Supply, certain work on de-icing—in one case involving the loan of two surveyors to the A. and A.E.E., Boscombe Down, to assist in flight tests. On the subject of fuel for gas turbines, it was again underlined that the Board would strongly oppose the use of fuels having a lower flash-point than that of kerosine.

As a result of the "rather disappointing" failure to reach agreement on performance standards at the last I.C.A.O. division meetings, a standing performance committee had been appointed to hold informal meetings, at which, it was hoped, there would be better prospects of resolving the difficult technical issues. This committee hoped to complete its task in 1953. On the power-plant side, the 1951 meeting was as successful as could be hoped. The Board felt that alterations in the form of the gas-turbine type test were inevitable, but that it was highly desirable to adhere to the existing schedules, in order to build up a satisfactory background. Proposals to this effect had been agreed upon, as had the British recommendations for power-plant installation requirements of turbine-powered aircraft. Much technical good had sprung from the international airworthiness discussions, but much more remained to be done; the report added that I.C.A.O. would do well to examine its whole outlook on the airworthiness question.

Prototype aircraft receiving normal-category certificates of airworthiness had included the Ambassador and Comet. It was pleasing to report that the latter had suffered from only minor teething troubles—rather less than were often encountered in more orthodox aircraft. Eight piston engines (three of them large units) had been type-tested in the period under review, and the Board had devoted considerable attention to the modifications of the previously approved versions. This was a healthy feature which, perversely enough, usually resulted in an engine attaining first-class reliability just as it became obsolete. Good progress had been made with gas-turbine engines, of which six had been type-tested. From an investigation of the new turbojet and turboprop prototypes, all the indications were of a marked decrease in the time spent on maintenance in the field and the workshop. No helicopters had been certificated, but much work had been in progress on helicopter power-plants.

The A.R.B. had now approved nearly 2,600 types of instrument or equipment, 300 of which had been added during the past year—several after very extensive design surveys. The Board had also investigated installations of the American V.O.R. equipment and the latest type of Decca Flight Log; the latter system had been submitted to I.C.A.O. for adoption as an alternative standard. Murphy D.M.E. equipment in a Comet had also been investigated.

The Board's work on flight-testing of prototypes had declined towards the end of the year, and the flight test section had been able to devote more time to the maintenance of flying qualities by revising the test schedule for a number of series aircraft and aircraft due for renewal of C. of A. A new procedure for performance checks had been evolved; this, it was anticipated, would provide more comprehensive information on the performance of individual aircraft, and would also yield a large amount of statistical data on such matters as "fleet performance."

Overseas visits made last year by representatives of A.R.B. had included one to Australia and New Zealand, where no great problems had been found regarding the acceptance of British Cs. of A. Although no part of the official business, great interest had been observed in certain modern British aircraft. However, fears had been encountered that delay in British deliveries might force the operators to seek replacements from other countries.

Last autumn, I.C.A.O. had sought the assistance of the Board in establishing airworthiness procedures in Israel; consequently one of the senior surveyors had spent some months there and had been able to introduce a number of measures based on A.R.B. practice to improve airworthiness control. During the summer, members of the Board visited Switzerland, where agreement was reached on Swiss requirements for validation of U.K. Cs. of A. The initial contract with the Pakistan Government for advice and assistance in setting up airworthiness procedures which had expired last September had been extended for a further twelve months.

Though not a commercial organization in the true sense associated with trading concern, the Board was governed by a very commercial outlook and made every endeavour to be financially self-supporting. Deficit during the year was well within the limit provided for.

In conclusion, Lord Brabazon remarked that an organization such as the A.R.B., butting in as it did into so many autonomous enterprises, might well be looked upon as a first-class nuisance. It was due to the staff, whose object was to be helpful and co-operative, that the A.R.B. found itself agreeably tolerated, perhaps on the basis of Hilaire Belloc's famous lines:

Always keep ahold of Nurse, For fear of finding something worse.

Our American Correspondent Reports . . .

THE number of hours devoted by the U.S. Senate Interstate and Foreign Commerce Committee to hearings of proposed civil aviation Bills is very great. Since 1949 they have been constantly reviewing all manner of ways and means to aid in the financing and building of new civil jet transports but the only law passed has been the Prototype Aircraft Bill. This hasn't helped much, as Congress has so far refused to vote the money to implement it. But hearings still go on, and a few weeks ago four new proposed pieces of aviation legislation were introduced. One, Senator McCarran's "Construction Differential" Bill—already mentioned in this column—has received some favourable publicity, but the other three don't look as though they will get far. They were chiefly ideas for Government sponsorship—in one case to the tune of 100 million dollars. Later on came a practical but rather complicated (or so it seemed to us) suggestion put forward by the Chairman of the Civil Aeronautics Board.

In each case the industry's reaction has been mixed, and generally unenthusiastic. As the *New York Times* reported: "Hearings revealed that airlines and aircraft manufacturers were anything but united in their views of what should be done. Some wanted Government aid and some wanted no part of it." Even the Air Force was lukewarm, as they said any new civil development would interfere with military production. Later they relented somewhat and advised the Chairman that the Defence Department favoured reasonable development (a long way from supporting it practically).

• • •

WHEN Mr. Donald Nyrop, the chairman of the Civil Aeronautics Board, gave his evidence, he emphasised that it was going to take the United States at least five to seven years to reach the point of putting a jet transport into some sort of operation and it was, therefore, vital that any legislation should be enacted at once—a rather forlorn hope in an election year, with much more important work still to be finished and Congress due to recess. Nevertheless, he put forward the C.A.B. approved plan and hoped for the best. This seems to boil down to a suggestion that the Government should allocate fifteen million dollars for the building of fifteen jet transports—presumably by one or more companies. The money would be loaned at one per cent, and would go some of the way towards paying initial development costs. Thereafter the loan would be written off at one million dollars per aircraft built, so that, provided the manufacturers built fifteen machines, they wouldn't have to pay back any of the initial loan. Once the aircraft were available, the airlines would be subsidised by the C.A.B. to operate them for a year on cargo operations. Reactions to this plan, although mixed to start with, have since shown a favourable trend, and the president of the Aircraft Industries Association, Admiral Ramsey, reports that the majority of the A.I.A. members favour the C.A.B. suggestion; so something concrete may come of this, at last.

• • •

THE discussions before the Senate Committee raise the question, "What *do* the airlines here want in the way of new turbine aircraft, and what can the manufacturers give them? And when?" There are lots of answers, ranging from that of the enthusiasts who say that existing types should be re-engined (indeed Lockheed have 85 Super Connies on order, all of which could be fitted with turboprops) to ideas calling for an impossibly advanced specification which is so revolutionary that it is ahead of anything yet in the wind tunnels! But beyond temporary panaceas on one hand and wishful thinking on the other lies the area which both operators and manufacturers are studying with great care. The British progress time-factor is, of course, unknown but very important. Generally, people now hope for an American jet to appear in 1954 or 1955 and be operating three years later. At the back of the discussions on specifications is the Air Transport Association, who are working in close co-operation with the Civil Aeronautics Administration Prototype Committee, and who wield a lot of influence.

These two bodies have already produced and issued several preliminary specifications for turbine aircraft, not necessarily as guidances, but more as ideas to be kicked around. The types considered fall into four categories—a feederline aircraft (which could have piston engines to start with), two turboprop cargo types and a jet transport.

The suggested feederliner is bigger than one might expect, having a payload of over 5,200 lb with a range of 350 miles at this loading, plus 200 miles to alternative airport plus 45 minutes holding. Extra tankage for 175 miles should be available. At this weight approximately 24 passengers and their baggage should be carried, plus some cargo. The latter is an important part of the picture here, and easy loading and unloading is necessary.

Pressurization would be desirable but not essential; in discussion with feederline operators one learns they want high rates of climb and descent in order to improve block times, and this might be uncomfortable for the passengers without adequate pressurization. Costs must be as low as possible, of course—certainly under the current figure for the DC-3—and must be based on fairly short stage-lengths of about 100 miles or so and using the smaller airfields around the townships, with 3,500 to 4,000ft. runways.

The cargo specifications were for two turboprop aircraft having payloads of 30,000 lb and 50,000 lb respectively. The smaller of the two should have a range of 2,000 miles plus reserves, and a block speed of not less than 300 miles per hour, and would need an airport with runways of 5,000ft. Cargo could be in a non-pressurized single compartment, but the cockpit should be pressurized, although adequate temperature-control would be needed for the whole space. The door should be at least 7ft by 10ft and at lorry level. The larger aircraft should have a range of 2,500 miles plus reserves (speed is not quoted) and would need runways of 6,500 to 7,000ft. For this aircraft more than one door is suggested, and some part—if not all—of the cargo compartment should be pressurized.

• • •

THE image in the crystal ball for the jet transport requirements is not so clear, or perhaps it is being interpreted differently. The C.A.A. and the Air Transport Association were thinking in terms of a payload of between 19,000 and 20,000 lb (50-60 passengers) with a range of 2,000 miles plus reserves of at least 800 miles and a speed of 500 m.p.h. This should give an aircraft suitable for domestic use at the higher payloads and one which would also be capable of one-stop Atlantic operation at a lower figure—perhaps 14,000 to 15,000 lb—with reserve fuel of two hours plus 300 miles against the known worst head-winds at 35,000ft. Block speeds of 500 miles an hour were desired. Take-off and runway lengths would have to conform to current requirements and existing airports—say, a maximum of 7,000ft on hot days at sea level.

On the other hand, Pan American Airlines was reported in *American Aviation* as favouring an aircraft with a cruising speed of M.0.85 or M.0.95, operational altitudes of 50,000ft, 50-60 passengers in luxury seating—or sleeping—a non-stop Atlantic range, and a landing speed of not much more than 105 m.p.h. This calls for quite an aeroplane, but it would be more or less in line with Lockheed's reported 200,000 lb, 580 m.p.h. project. Boeing are not so ambitious—at one jump, anyhow. The Boeing 473 was originally estimated at 125,000 lb to 130,000 lb with a cruising speed of 500 m.p.h. at 35,000 to 40,000ft.

Douglas, in accordance with Arthur Raymond's doctrine of "The Well Tempered Aircraft," seem to be thinking more in terms of domestic jet requirements and a logical follow-through of their current DC-6 and 7 programmes. This would be the DC-8, design of which is believed to be well under way and which may be the first of the American jet transports to fly. [A note on the DC-8 appears on p.734—Ed.]

FROM THE CLUBS

THE Plymouth Flying Club has been enjoying its busiest season on record. A big factor in this increased activity has been the recreational-flying scheme recently introduced by the Royal Naval College at Dartmouth, whereby some 60 cadets are given dual instruction at week-ends—30 every other Sunday. In this way each boy receives about 3½ hours of instruction during his course, thereby keeping Plymouth's three instructors, needless to say, very busy. In addition to the Naval cadets, the P.F.C. also trains A.T.C. cadets, some 11 having passed through its hands since the inauguration of the scheme in July, 1950; a further batch is expected shortly.

The club has a membership of 200, two-thirds of whom are active flying members, and since the beginning of the year to May over 790 hr flying have been logged. Some six P.P.L.s have been awarded to members since January. The fleet now consists of two Tiger Moths, one Autocrat, one Messenger, and one Gemini, rates for which are, respectively, £3, £3, £4 10s. and £6 per hour dual and solo.

Mr. S. G. Smith, late of Southend, has now taken over instructing at Roborough, where he doubtless finds a vast difference in the size of the airfield.

On June 7th, the fourth annual Plymouth Air Display was staged, and proved to be perhaps the most successful of the flying events held that week-end, the weather being particularly kind to that part of the world. An extremely varied programme was laid on, including fly-pasts by a Washington, Sunderland, and Hastings, followed by a formation of Shackletons, and also individual aerobatics by a Canberra, Chipmunks, Spitfire, Fireflies, and Sea Furies. There was also a demonstration by naval Vampires from R.N. Air Station Culdrose.

A naval Dragonfly helicopter displayed its rescue ability and Marine Commandos from a local training school parachuted from a kite balloon. Music during the interval was provided by the W.R.A.F., and the finale was, as usual at these Plymouth events, the beating of Retreat by the Plymouth Division of the Royal Marines.

HAVING settled down in its new surroundings, the Elstree Flying School (owned and operated in conjunction with Wolverhampton Aviation) is making very rapid progress. Its total flying membership now exceeds 20, while another 20 or so pupils are under instruction. Four P.P.L.s have been obtained since the club moved in—some two months ago—and four pupils will shortly be taking the tests.

Perhaps the widest range of types offered for club and instructional flying is to be found here, where the fleet includes such machines as Messenger, Monarch, Gemini and Rapide, in addition to the more conventional Austers and Magisters. Rates for some of these types are, understandably perhaps, on the high side, the Rapide being available at £10 per hour, Gemini £6, Messenger £4 10s., and Monarch £3 10s. Austers and Magisters are £3 3s. and £3 (dual and solo) respectively.

DURING May the Wiltshire Flying Club's flying time amounted to 296 hr 5 min, bringing its total for the year to date to 1,029 hr 35 min. The club's maintenance scheme is apparently proving popular, for during May no fewer than 12 Cirrus Minor II engines passed through Thruxton's hangars for complete overhaul.

This year the W.F.C. will celebrate its 21st birthday, for it was in 1931 that the club began its activities, operating from a 400 × 300 yd field at High Post, near Salisbury. In those days the club's "fleet" consisted of one Redwing, G-ABLA, fitted with a 80-88 h.p. Genet engine; since then, some 14 different types have been operated by the W.F.C., culminating in the Autocar, G-AMNB.

May was an important month for the club, for it was during this period that the de Havilland Flying Club—from the D.H. works at Christchurch—joined the W.F.C. as a unit. This branch has nearly 40 flying members, all of whom will train at Thruxton under the business-houses flying training scheme. The W.F.C. also looks forward to welcoming the Vickers organization in the district, who are shortly to start their own flying club at Thruxton.

THE West London Aero Club, for the first five months of the year, has logged some 998 hr 55 min; eight Private Pilots' Licences have been awarded, and 20 pupils are currently under training. Flying membership now stands at 255, and the club offers the services of two full-time and two part-time instructors, the two former being Miss Joan Hughes and Mr. McDouall.

In company with many other major clubs, West London is handling a large number of A.T.C. cadets; three have just completed their training, two are under instruction, and a further contingent is due later in the year.

The fleet—including that of the Fairey Flying Club, to whose members the W.L.A.C. gives instruction—consists of four Tiger Moths, two Hornet Moths, two Tipsies, two Austers, and one Magister.

THE Round-Sicily air race, held on June 8th, was won by Iginio Guagnellini (Italy) in an Ambrosini G.F.4 Rondone. Second was Robert Goemans (Belgium) flying a Piper, who came in one minute behind the Italian. Goemans won the first part of the race, from Palermo to Catania on June 7th, and Guagnellini won the section which completed the circuit round the island from Catania.

FROM L'Aero Club de Touraine comes an invitation to British private pilots to attend the 12th international "Loire Chateaux and Wines of Touraine Rally," to be held on Saturday and Sunday, July 5th and 6th, at Tours. The club which sends the most aircraft will be awarded the Coupe du Conseil General d'Indre et Loire. Incidentally, the Coupe Stella, which was won three years in succession by the Elstree Flying Club, and which is now their permanent property, is to be re-presented to the Tours Aero Club for further competition as an expression of goodwill between the two clubs. This trophy was won by the club for sending the most aircraft to the Rally.

R.Ae.C. AVIATORS' CERTIFICATES

BELOW is a further list (the previous one was published on June 6th) of R.Ae.C. Aviators' Certificates, dated up to April 30th. They include the majority of those to whom Certificates were issued under the old scheme which ended on March 24th; the dates given are, as usual, those of the issue of the Certificates, and not those on which each pilot qualified. The next list to be published will include any remaining names under the old scheme, and will then give those qualifying under the new arrangements.

No.	Name	Club or School	Date
28,016	F. L. Swales	R.A.F. Cottesmore	18.3.52
28,017	C. J. Morgan	Qualified Service pilot	18.3.52
28,018	R. Smith	R.A.F. Cottesmore	18.3.52
28,019	D. C. Bull	Syerston	18.3.52
28,020	G. T. Holden	Qualified Service pilot	18.3.52
28,021	I. C. Carmichael	" "	18.3.52
28,022	D. F. Christmas	R.A.F. Oakington	18.3.52
28,023	C. A. L. Wollert	" "	18.3.52
28,024	P. N. D. Skingley	Redhill Club	21.3.52
28,025	L. Waudby	Wolverhampton Aero Club	21.3.52
28,026	J. Ismay	Qualified Service pilot	21.3.52
28,027	J. G. Smith	Newcastle-upon-Tyne Aero Club	21.3.52
28,028	D. J. K. Butcher	Airways Aero	21.3.52
28,029	A. R. Tunaley	Northants Aero Club	21.3.52
28,030	L. A. Potter	R.A.F. Cottesmore	21.3.52
28,031	M. W. Druitt	Qualified Service pilot	21.3.52
28,032	G. J. Buxton	R.A.F. Cottesmore	21.3.52
28,033	M. J. Crocker	" "	21.3.52
28,034	W. N. Carter	" Syerston	21.3.52
28,035	C. E. Ford	" "	21.3.52
28,036	R. de-H. Dobree-Carey	" "	21.3.52
28,037	H. R. Jenkins	R.A.F. Syerston	21.3.52
28,038	G. F. H. Hume	Qualified Service pilot	21.3.52
28,039	D. H. Anslow	Rochester Flying Club	2.4.52
28,040	C. M. Illingworth	R.A.F. Cottesmore	2.4.52
28,041	G. E. Tricker	Qualified Service pilot	2.4.52
28,042	D. Bonce	R.A.F. Cottesmore	2.4.52
28,043	E. N. Boakes	" "	2.4.52
28,044	L. J. Bradley	" "	2.4.52
28,045	R. A. Crook	" "	2.4.52
28,046	T. R. Fulton	" "	2.4.52
28,047	P. J. Hardy	" "	2.4.52
28,048	I. Hutchinson	" "	2.4.52
28,049	G. R. Stanton	Northants Aero Club	2.4.52
28,050	S. H. Lawrence	" "	2.4.52
28,051	A. L. Cole	Qualified Service pilot	2.4.52
28,052	J. W. Dyckes	R.A.F. Cottesmore	2.4.52
28,053	G. Hallion	" "	2.4.52
28,054	P. G. Harknett	" "	2.4.52
28,055	R. Thomas	" "	2.4.52
28,056	R. E. Braund	" "	2.4.52
28,057	Lieut-Col. H. F. Trewby	Qualified Service pilot	
28,058	D. S. Doggett	Penguin Flying Club	10.4.52
28,059	I. M. Selwyn	Stansted Airport	16.4.52
28,060	C. E. Clark	R.A.F. Cottesmore	24.4.52
28,061	J. F. X. Veronneau	" Little Rissington	24.4.52
28,062	S. Evans	" "	24.4.52
28,063	K. A. Stockton	" Cottesmore	24.4.52
28,064	R. H. Rowe	" "	24.4.52
28,065	J. F. Alderton	" Feltwell	24.4.52
28,066	K. P. Austin	Rochester Flying Club	24.4.52
28,067	D. E. Rock	Wolverhampton Aero Club	30.4.52

Do you know your airfields?

23

Recognise this airfield? It's No. 23 in this series of puzzle photographs. You'll find the answer below on the right.★

Lucky the aircraft operators—be they international airlines or week-end joy-riders—who use Shell and BP Aviation Service. The keen crews of the famous Aircraft Servicing Vehicles, on duty at twenty-six of Britain's aerodromes, are always glad and willing to take the refuelling work off everybody else's hands—yours included.

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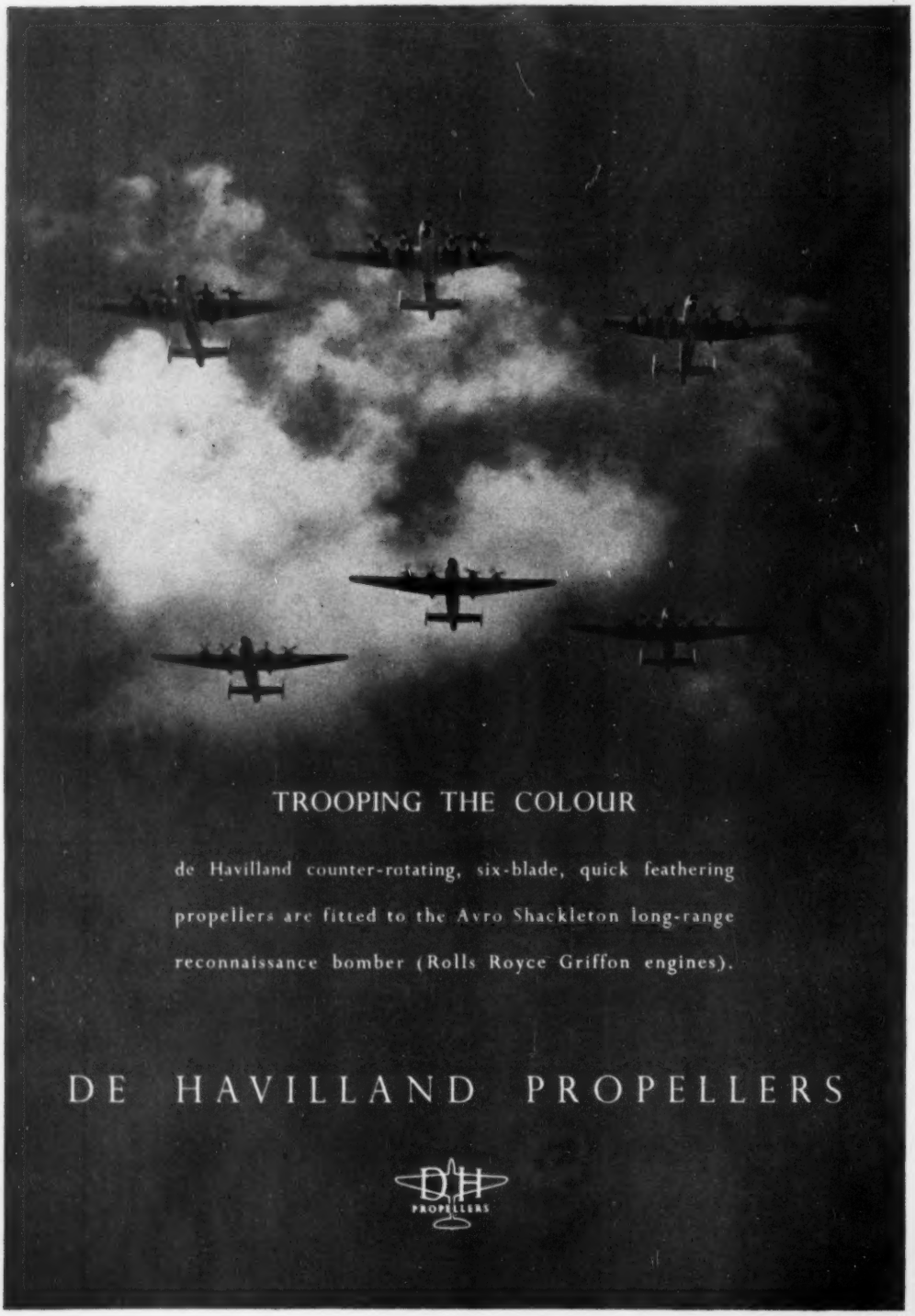


TROOPING THE COLOUR

de Havilland counter-rotating, six-blade, quick feathering propellers are fitted to the Avro Shackleton long-range reconnaissance bomber (Rolls Royce Griffon engines).

DE HAVILLAND PROPELLERS

DH PROPELLERS

SERVICE AVIATION

Royal Air Force and Naval Aviation News

More R.C.A.F. Sabres Arrive

LAST Sunday evening 21 Canadair-built F-86E Sabres of No. 439 Squadron, R.C.A.F., arrived at North Luffenham from Kinloss after having flown across the Atlantic. The squadron left Uplands Airport, Ottawa, on May 30th. Ground crews travelled in four Canadair North Stars of R.C.A.F. Transport Command, two of which preceded the Sabres and two which left shortly after the fighters had gone.

S/L. Bricker, the C.O. of No. 439, was taken ill with appendicitis while at Bagotville, Quebec, the first stop after leaving Uplands. He continued, however, in one of the North Stars, receiving medical attention at each stop.

R.A.F.S.A.A. Bisley Meeting

WITH the exception of the final day's shooting, the Royal Air Force Small Arms Association's annual prize meeting at Bisley last week was held in brilliant weather. As was the case last year, there was a record entry—even the big Century Range was not large enough.

Since the 1951 meeting the R.A.F.S.A.A. have taken over the old Inns of Court clubhouse and are turning it into an officers' mess, the old R.A.F. clubhouse being handed over for use by other ranks. Members of the Oxford and Cambridge Rifle Association are honorary members of the new officers' mess.

In the R.A.F. Rifle Championship, Sgt. Lane-Joynt, with a score of 356, broke a record which had stood since 1932 when S/L. Willott, then a sergeant, scored 355 points. For the first time there was a tie shoot for the R.A.F. Revolver Championship. On the first day F/L. Kennedy had a lead of seven points over F/L. Steele, but on the second day Steele scored 97 to Kennedy's 90, bringing the score all square. In the tie shoot, which was shot off on the 50-yard range, Steele beat Kennedy by two points with scores of 25 and 23 respectively.

F/L. Steele is going to Helsinki as Britain's No. 1 Olympic silhouette pistol shot and will be accompanied by W/C. Guy, who is first choice as a free-pistol shot. A.V-M. W. E. Staton will captain the team. Incidentally, it is expected that A.V-M. Staton will give up the chairmanship of the R.A.F.S.A.A. this year. His retirement will be very much regretted, but G/C. Watt, whose name has been mentioned, will make a very popular successor to the air vice-marshal. The final day of the meeting was attended by many senior officers. Unfortunately neither the present C.A.S., Sir John Slessor, nor the C.A.S. Designate, Sir William F. Dickson, were able to attend, although both had hoped to be present.

Winners of the main competitions were:—

Rothermere Shield.—1st, Technical Training Command (5,853); 2nd, Fighter Command (5,812); 3rd, Maintenance Command (5,774).

Command Rifle Team Match (S.R.a).—1st, Maintenance Command (1,286); 2nd, Technical Training Command (1,271); 3rd, Fighter Command (1,261).

Command Rifle Team Match (S.R.b).—1st, Fighter Command (1,071); 2nd, Home Command (1,065); 3rd, Maintenance Command (1,063).

Command Revolver Team Match.—1st Fighter Command (659); 2nd, Technical Training Command (644); 3rd, Maintenance Command (619).

Station Rifle Match (S.R.a).—1st, St. Athan (1,197); 2nd, R.A.F. College Cranwell (1,191); 3rd, Leeming (1,191).

University Air Squadrons' Match (S.R.b).—1st, Nottingham University (734).

Combat Snapshooting Team Match.—1st, North Coates (62 sec); 2nd, No. 95 M.U. Ridgewell (74 sec).

R.A.F. Rifle Championship.—1st, Sgt. P. W. Lane-Joynt (356); 2nd, F/O. M. Gill (348); 3rd, F/L. H. A. Steele (343).

R.A.F. Revolver Championship.—1st, F/L. H. A. Steele (192); 2nd, F/L. H. Kennedy (192); 3rd, W/O. Sperring (183).

Rifle Twenty Match.—1st, F/L. H. Gill (141); 2nd, S/L. C. C. Willott (140); 3rd, S/L. W. J. Read (139).

Small Arms Efficiency Challenge Cup.—1st, S/L. C. C. Willott (less 20); F/L. H. Gill (less 33); 3rd, F/L. H. A. Steele (less 45).

L.A.A. GUNNERY: A demonstration by gunners of No. 2501 (County of Gloucester) Squadron, R.Aux.A.F. Regiment, during their summer camp at the Light Anti-Aircraft Gunnery School, Watchet, Somerset. They are firing break-up shot at attacking Vampires.

A.V-M. Atcherley

IT is with regret that we have to record an Air Ministry announcement, made last Friday, concerning A.V-M. D. F. W. Atcherley, A.O.C. No. 205 Group, M.E.A.F., who was reported missing on a flight in a Meteor P.R.10 from Fayid to Cyprus on June 8th. It is stated that he "is now feared to have lost his life."

Two Korean D.F.C.'s

THE London Gazette has announced the award of the Distinguished Flying Cross to F/L. C. I. Blyth, A.F.C., and F/L. M. Scannell, both of whom are R.A.F. officers serving in Korea with No. 77 Squadron, R.A.A.F.

These pilots were attached to No. 77 Squadron to instruct in the conversion

AT BISLEY: (Top left) F/L. H. A. Steele and W/C. R. F. B. Guy, who have been selected to shoot for Britain in the Olympic Games. (Top right) Air Chief Marshal Sir Hugh P. Lloyd checks Bomber Command's position in the Rothermere Shield competition. (Bottom left) Sgt. Lane-Joynt, winner of the rifle championship, in the rapid-fire match. (Bottom right) Air Chief Marshal Sir Leslie N. Hollinghurst, who is due to retire shortly, being greeted on arrival by A. V-M. W. E. Staton, chairman of the R.A.F.S.A.A. "Flight" photographs

SERVICE AVIATION . . .

from Mustang to Meteor aircraft but, in addition, both of them flew over 100 operational sorties each. The two citations covering these awards each refer to "aggressiveness and determination which has brought great credit on himself and the Royal Air Force."

Birthday Awards

THE following awards of the British Empire Medal and of the Queen's Commendation for Valuable Service in the Air, complete the list of Royal Air Force awards announced on the occasion of Her Majesty's birthday.

B.E.M. (Military)

Warrant Officer L. G. Cankett. Flight Sergeants H. J. Almond, J. Boocock, H. Button, C. Dalton, R. A. Donovan, B. K. Gardiner, F. R. Lucas, N. A. C. Lunn, F. McCarthy and W. S. Sharp. Chief Technicians T. E. Beale and N. H. Pearce. Sergeants J. A. Basham, L. R. Bird, R. Crosby, R. W. Daintrey, R. Elliott, E. Hewison, S. D. Johnson, R. Kernohan, A. A. Millar, J. R. Russell, K. Walker, W.R.A.F., and B. H. Wright. Corporals E. A. Myall and R. V. F. Robins. Junior Technician W. S. Binek. Senior Aircraftman H. J. R. Matthews. Leading Aircraftman L. H. Osborne.

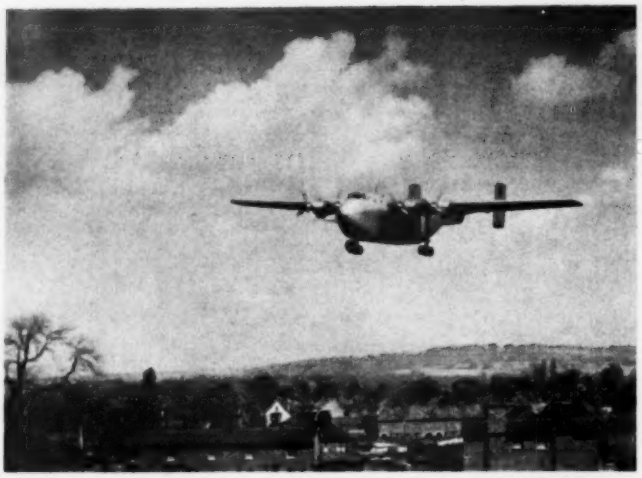
QUEEN'S COMMENDATIONS FOR VALUABLE SERVICE IN THE AIR

Squadron Leader J. G. Harrison. Act. Squadron Leader T. C. Imrie, D.F.M. Flight Lieutenants R. Bowie, B. N. Byrne, M. A. Clancy, P. H. T. Clay, D.F.C., B.E.M., J. T. Cole, M. R. S. Cunningham, N. F. Curtis, E. L. D. Drake, D.F.C., J. W. Everitt, W. W. Forster, J. Gale, C. R. Gordon, R. F. Marshall-Hardy, J. K. Holt, L. Kozlowski, E. R. W. Lawson, V. A. Madeley, J. C. Marmion, G. Raper, J. B. Richardson, D.F.C., C. J. G. Short, C. H. Sloan, C. W. Sweetman and R. J. Trace. Flying Officers P. I. Briggs, D.F.C., and W. H. Thick. Master Pilot R. Reynolds. Flight Sergeants J. R. Barlow, A. S. Clarke, A.F.M., E. J. Dalton, G. F. C. Jenks, J. W. Newport, D. Skinner and I. C. Webb. Sergeants F. W. Goodwin, B. Szota and R. J. Worthing. Lieutenant A. G. H Perkins, R.N.

V.C. Portrait Presentation

ON behalf of the donor, G/C. K. M. Hampshire, Air Marshal J. D. I. Hardman, Chief of the R.A.A.F. Air Staff recently presented a portrait of the late F/L. W. E. Newton, V.C., to the R.A.A.F. College at Point Cook.

G/C. Hampshire was in command of No. 22 Squadron when F/L. Newton won the V.C., as captain of a Boston making bombing attacks against targets on the Salamaua isthmus in New Guinea. On March 16th, 1943 F/L. Newton dived through intense and accurate gunfire and although his aircraft was hit repeatedly and seriously damaged, he bombed his target at a low level and got back to base. Nevertheless, the next day he returned to the same locality to attack an even more difficult target. His aircraft burst into flames but he brought it down into the water with great skill to give his crew a chance to get ashore.



THE HILLS AND THE SKY: There is a breath of fresh air in this new study of the Blackburn and General Aircraft G.A.L.60 prototype as seen from the flight-control tower at Brough, with the foothills of the Yorkshire Wolds beyond. Much interest has been shown in the possibilities of this military freighter, and it is believed that the cost problem is the main factor now holding up its adoption.

R.N.M.W.S. Uniform

THE uniform to be worn by members of the Royal Naval Minewatching Service has been approved by the Queen. It comprises beret, battledress and greatcoat with a shoulder-flash bearing the initials R.N.M.W.S. The badge to be worn on the beret consists of a silver splash on a blue ground with two silver waves below, the whole encircled by a gold rope, with its ends crossed at the foot. The initials appear on the top in black and a naval crown in gold surmounts the whole design.

The new service was formed in January. In an emergency its members will man posts ashore and afloat to report on aerial mining of waterways by the enemy.

R.C.A.F. Training

THIS month the station at Penhold, Alberta, is to open and will house No. 4 Flying Training School, which will move in phases from its present base at Calgary. Student pilots already under training at Calgary will continue there, but all new intakes will be posted direct to Penhold.

Penhold is the eighth R.C.A.F. station to reopen under the accelerated training programme. No. 4 F.T.S., flying Harvards, trains pupils up to wings standard.

A.O.P. Summer Camps

TWO flights of No. 661 (Air Observation Post) Squadron, R.Aux.A.F., are to spend their summer camp at Detmold in Germany.

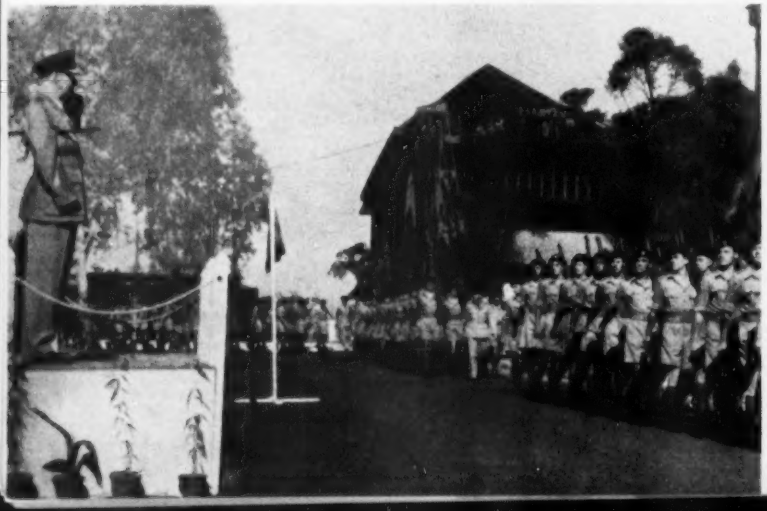
There are five of these A.O.P. squadrons, manned jointly by the Territorial Army and the R.Aux.A.F. The Territorial Army provides pilots, drivers and signallers, while from the R.Aux.A.F. come the aircraft fitters, instrument repairers, electricians, photographers and clerks. The main tasks are the direction of artillery fire and the obtaining of tactical information by visual and photographic reconnaissance.

Halton Colour Presentation

THE closing date for applications for invitations to the Presentation of the Queen's Colour at Halton on July 25th has been extended to June 25th. Details regarding applications were published in our issue of June 6th.

R.A.F. Dinner Club

IT has been decided to increase the maximum membership of the R.A.F. Dinner Club from 500 to 750. Officers (of substantive rank of Wing Commander and above) who wish to join should communicate with the Hon. Secretary, R.A.F. Dinner Club, Room 233, Adastral House, Kingsway, London, W.C.2.



BIRTHDAY CELEBRATIONS: Air Chief Marshal Sir Arthur P. M. Sanders, K.C.B., K.B.E., A.O.C.-in-C. Middle East Air Forces, taking the salute at the parade held in Ismailia to celebrate the official birthday of the Queen.

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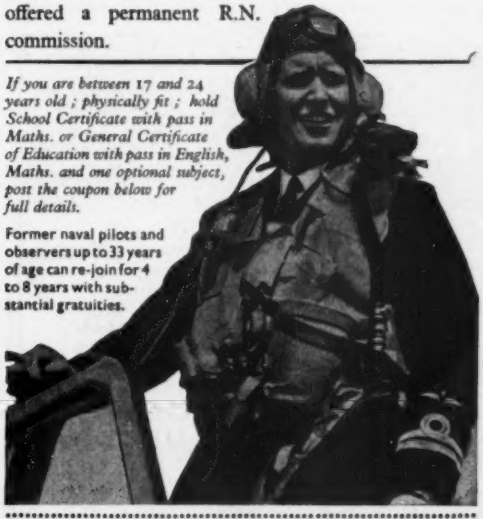

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FREE! Brochure giving details of courses in all branches of aero eng. covering A.F.R.Ae.S., M.C.A. exams, etc. We are the only postal training college operated by an industrial organisation.—Write to E.M.I. Institutes, Postal Division, Dept. F36, 43, Grove Park Road, London, W.4. Tel.: Chiswick 6417. (Associated with H.M.V.) [0258

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SITUATIONS VACANT

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc., if the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is exempted from the provisions of The Notification of Vacancies Order 1952.

VICKERS-ARMSTRONGS, Ltd. (Aircraft Section), have vacancies at Horn Depot for the following staff:—
AIRCRAFT STRESSMEN
DESIGN DRAUGHTSMEN
(aircraft experience preferable, but not essential).
JIG AND TOOL DRAUGHTSMEN
(aircraft experience preferable but not essential).
FLIGHT TEST OBSERVERS
(experienced on modern aircraft).
JUNIOR STRUCTURAL DRAUGHTSMAN
(works engineer's department).
APPLY in writing to the Employment Manager, Vickers-Armstrongs, Ltd. (Aircraft Section), Weybridge, Surrey.

APPLICATIONS, with certain exceptions, are subject to the approval of the Ministry of Labour and National Service. [8278

MANCHESTER CORPORATION AIRPORTS DEPARTMENT

APPLICATIONS are invited from suitably qualified persons for the post of airport foreman, Ringway Airport, at a salary in accordance with Miscellaneous Grade IV (£600-£4701) of the National Scheme of Service Conditions. Duties will include supervision of portering, aircraft marshalling, freight loading, etc.—Further details, together with application form, are obtainable from the Acting Airports Manager, Ringway Airport, Manchester, on receipt of a stamped addressed envelope. The form should be returned to the same address by June 27th, 1952. Previous applicants need not apply. Canvassing is prohibited. [8289

CITY OF MANCHESTER

FIRE OFFICER—AIRPORTS DEPARTMENT

APPLICATIONS are invited from suitably qualified persons for the above post at a salary scale of £560, rising by annual increments of £15 to £620 per annum. The commencing salary will be fixed according to qualifications and experience of the person appointed.—Further details, together with form of application, may be obtained from the Acting Airports Manager, Ringway Airport, Manchester, on receipt of a stamped addressed envelope, and should be returned to the same address by June 27th, 1952. Previous applicants need not apply. Canvassing is prohibited. [8288

STATES OF JERSEY

APPLICATIONS are invited from independent forecasters for a temporary appointment in the Meteorological Department at Jersey Airport, for a period of approximately four months, commencing as early as possible.

THIS appointment, which does not carry establishment in the Jersey Civil Service, will come within the scale of £400 to £540, according to experience and qualifications.

FULLEST details of experience, qualifications, age, etc., immediately please, to the Airport Commandant, Jersey, Channel Islands. [8280

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WRITE to Secretary of the Admiralty (C.W.509P), Queen Anne's Mansions, London, S.W.1. [8194

REQUIRED for large factory in S.E. England:—

(a) Engineer with experience of the testing and maintenance of aircraft gyroscopic and servo equipment. H.N.C. standard of education.

(b) Two engineers with experience of the testing and maintenance of airborne electronic equipment. For one post, experience of servo-mechanisms would be an advantage; for the other, experience of radio transmitter-receivers. Must have H.N.C.

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HANDLEY PAGE, Ltd., have vacancies for:—

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SENIOR design and intermediate draughtsmen, preferably with aircraft experience, for Cricklewood and Radlett offices. Consideration will be given to applicants with experience in light structural or mechanical engineering. Possession of O.N.C. or H.N.C. (Mech. or Elect.) an advantage.

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SENIOR and junior assistants of degree or H.N.C. standard for the Mechanical and Structural Test Dept. at Radlett.—Write, stating age, qualifications and details of experience, to Staff Officer, Handley Page, Ltd., Cricklewood, London, N.W.2. [8211

THE DE HAVILLAND AIRCRAFT Co. Ltd., Airspeed Division, Christchurch Aerodrome, Hampshire, require the following personnel:—

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ONE in applied maths (electronic).
ONE in landline and telegraph techniques.

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THE BRISTOL AEROPLANE Co., Ltd., have vacancies in their London Aircraft Design Drawing Office for senior and intermediate draughtsmen.

APPLICATIONS should be forwarded to the Ministry of Labour and National Service, 20, Nelson Street, Bristol, and marked for the attention of the Personnel Manager. The Bristol Aeroplane Co., Ltd., Aircraft Division, Filton House, Bristol. [8271

CLERK required to control stores and other aircraft matters, Croydon Airport. Must be prepared for hard work. Ample opportunities. Box 0562. [8302

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THE BRISTOL AEROPLANE Co., Ltd., have vacancies in their Aircraft Design Drawing Office for loftsmen with aircraft experience; also experienced linesmen for work in lofting (lithographic process).

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WEIGHT estimator required by Percival Aircraft, Ltd., Luton Airport, Beds., for work on fixed wing and helicopter aircraft.—Apply, giving details of age, qualifications, experience and salary required, to: Manager, Ministry of Labour and National Service, Luton, Beds. [8282

AIRWORK, Ltd., require ex R.A.F. flying instructors, preferably with ab initio experience, for duties in the north of England. Applicants should possess a minimum B.1. category.—Apply: Chief Instructor, Airwork, Ltd., R.A.F. Station, Digby, Nr. Sleaford, Lincs. [8284

TECHNICAL assistant, H.N.C. standard, and of British nationality, required for interesting and varied work in heat exchanger test laboratory.—Apply in writing to Heat Exchanger Engineer, Delaney Gallay, Ltd., 12, The Mall, Cricklewood, N.W.2. [8286

WEIGHTS engineers to work on fixed and rotating-wing aircraft required by Saunders-Roe, Ltd. Good conditions and prospects. Salary according to age and experience.—Please forward full details to the Cowes Office of the Ministry of Labour and National Service. [8270

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HANDLEY PAGE, Ltd., require a technical assistant of degree or H.N.C. standard to carry out work on thermo-dynamic problems for aircraft air-conditioning and thermal de-icing systems.—Write, stating age and giving particulars of qualifications and experience, to Staff Officer, Handley Page, Ltd., Clarmont Road, London, N.W.2. (0210)

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APPLICATIONS are invited from senior and intermediate design draughtsmen. Experience of aeroengine design desirable, but not essential. Also checkers. —Please write, stating age and giving details of previous experience in chronological order to the Personnel Officer, The de Havilland Engine Co., Ltd., Stag Lane, Edgware, Middlesex. (0200)

BRITISH EUROPEAN AIRWAYS require a technical publications assistant at their Renfrew base. Experience of preparation of information for publication, a knowledge of aircraft construction (particularly Dakota and D.H. 89), spares and stores, and an ability to read engineering drawings, are required. Salary scale, £6/16/0 to £11/1/6 per week.—Apply in writing to the Base Personnel Officer, B.E.A., Airport for Glasgow, Renfrew. (0276)

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HANDLEY Page (Reading), Ltd., The Aerodrome, Woodley, Reading, have vacancies in their design office for senior aircraft draughtsmen both electrical and airframe, also for a weights engineer with at least two years' experience. These positions are progressive and offer good scope for advancement to the right men.—Please send full particulars to the Personnel Officer or apply through your Local Employment Exchange. (0074)

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MARCONI'S WIRELESS TELEGRAPH Co., Ltd., Chelmsford, require an engineer having recent experience as leader of a group concerned with the design of communication receivers for aircraft. Applicants should preferably have some knowledge of D.F. techniques and should be familiar with modern miniaturisation methods. The position offered is a responsible one involving the control of a section and only applicants having good technical qualifications and sound experience in the above field need apply. The salary offered will be commensurate with the importance of the appointment. The selected applicant will be offered the use of a house. Pension scheme, etc.—Please apply in confidence giving full details and quoting reference 6758 to Central Personnel Services, English Electric Co., Ltd., 24-30, Gillingham Street, London, S.W.1. (0018)

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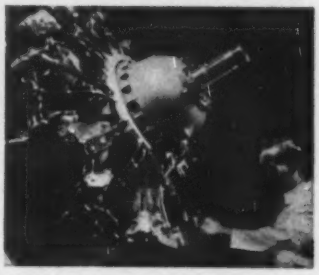

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ENGINEER or physicist, experienced in radar, is required for work in connection with flight trials of airborne and radar equipment. Degree or Higher National Certificate required. Experience of aircraft and flying desirable, but not essential. Work will be at Stanmore, Middlesex.—Apply in writing to the Staff Manager (Ref. GBLC/8/156), Research Laboratories of the General Electric Co., Ltd., North Wembley, Middlesex, stating age, qualifications and experience. [8227]

SENIOR technical assistant required for the Service Department of the de Havilland Engine Co., Ltd., preferably with experience on reciprocating and gas turbine engines. Suitable applicants will be required to work on Headquarters' staff of the Service Department at Leavesden Aerodrome, near Watford, Herts.—Apply in writing, stating age, qualifications and salary required, to the Personnel Officer, The de Havilland Engine Co., Ltd., Leavesden Aerodrome, near Watford, Herts. [8231]

BRITISH OVERSEAS AIRWAYS CORPORATION invite applications for the position of Ground Navigation Instructor based near London Airport. Selected applicant will give classroom instruction to aircrew up to Flight Navigator's Licence standard. Essential qualifications include recent instructional experience and possession of Flight Navigator's Licence. Salary in range £670 p.a. to £850 p.a. Applications in writing to Chief Personnel Officer, British Overseas Airways Corporation, Airways House, Great West Road, Brentford, Middlesex. [8285]

BRITISH EUROPEAN AIRWAYS require technicians for helicopter research. Applicants should possess engineering or science degree or equivalent, (147/52) Engineering Technician for performance and project analysis work. Some experience of performance testing desirable. Salary scale £520-£630 p.a. (146/52) Radio Technician for experimental work on radio, navigational aids, lighting, etc. At least 2 years' experience of radio navigational aids essential. Salary scale £750-£940 p.a. Both posts entail experimental flight tests on helicopters. —Apply in writing, quoting appropriate reference number, to Personnel Manager, B.E.A., Keyline House, Ruislip, Middlesex. [8282]

SENIOR scientific officers; scientific officers; patent examiner and patent officer classes. The Civil Service Commissioners invite applications for permanent appointments to be filled by competitive interview during 1952. Interviews will continue throughout the year, but a closing date for the receipt of applications earlier than December, 1952, may eventually be announced. The scientific posts are in various Government departments and cover a wide range of scientific research and development in most of the major fields of fundamental and applied science. The patent posts are in the Patent Office (Board of Trade), Admiralty and Ministry of Supply.

CANDIDATES must have obtained a university degree or with first or second class honours in an appropriate scientific subject (including engineering) or in mathematics, or an equivalent qualification; or for scientific posts, possess high professional attainments. Candidates for senior scientific officer posts must in addition have had at least three years' post-graduate or other approved experience. Candidates for scientific officer and patent posts taking their degree in 1952 may be admitted to competition before the result of their degree examination is known.

AGE limits: Senior scientific officers, between 26 and 31; for scientific officers and patent classes, between 21 and 28 during 1952 (up to 31 for permanent members of the experimental officer class competing as scientific officers). London Scales: Senior scientific officers, (men) £812 to £1,022; (women) £681 to £917; scientific officers, (men) £440 to £707; (women) £440 to £576; patent examiner and patent officer classes, (men) £440 to £656. (Rates for women under review.) Somewhat lower rates in the provinces.

FURTHER particulars from the Civil Service Commission, Scientific Branch, Trinidad House, Old Burlington Street, London, W.1, quoting No. S 53/52 for senior scientific officers and S 52/52, S 120/52 for the other posts. [8300]

BRITISH OVERSEAS AIRWAYS CORPORATION invite applications for the post of Flight Simulator Maintenance Engineer to be based near London Airport. Duties will include maintenance and overhaul of flight simulators and certain development work. Shift work will be involved. Applicants should have a technical knowledge up to the standard of Aircraft Radio Maintenance Engineer's Licence with knowledge of electricity, electronics and magnetism, valve parameters and associated circuitry, and oscilloscopes. Previous experience as aircrew and a knowledge of synthetic trainers would be an advantage. Salary range £11 5s. to £13 10s. p.w. Applications in writing should be addressed to the Chief Personnel Officer, B.O.A.C., Airways House, Great West Road, Brentford, Middx. [8280]

MINISTRY OF CIVIL AVIATION. Air traffic control officers. Applications are invited for at least ten Grade III posts. Candidates must be at least 23 and under 35 years of age on August 1st, 1952. Essential qualifications are alertness, good personality, physical fitness, tact and balanced judgment. Candidates must produce evidence of having reached a prescribed standard of educational attainments linked to the pre-1951 School Certificate with matriculation exemption standard. They must have had experience either as (a) pilot in civil air transport, preferably as pilot or navigator, with considerable experience in the United Kingdom, or (b) pilot or navigator in the Armed Forces, preferably with considerable experience of air traffic control in the United Kingdom. Exceptionally, candidates without aircrew experience will be considered, provided they meet the educational requirements given above, and have had considerable practical experience either in civil aviation or in the Armed Forces of duties directly concerned with the operation of air traffic control. Additional assets will be a general knowledge of civil aviation legislation and practice, and of radio and radar aids to navigation, and a working knowledge of the French language. Air traffic control officers are required to serve anywhere in the United Kingdom, and are liable to tours of duty overseas. Rates of pay range from £495 per annum at age 23 to £700 per annum at age 30 or over, on entry, rising by annual increments to £1,000 per annum (subject to deductions from £11 to £12 for posts outside the London area). Posts are unestablished, but have long-term possibilities.—Apply to the Ministry of Civil Aviation, Room 424, Adelphi House, Theobalds Road, London, W.C.1, for application forms and further particulars, quoting reference Est. 1a/ATCO. The latest date for receipt of completed applications is July 10th, 1952. Applications from overseas may be by letter in the first instance, giving date of birth and full details of qualifications and experience. [8294]

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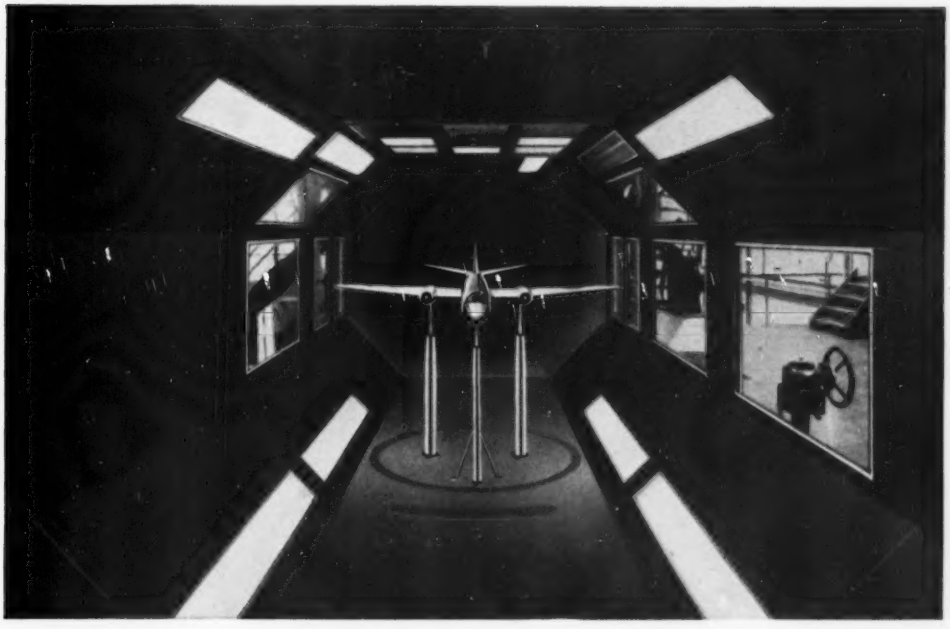

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